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Bradford Health Committee.

INFANTS' DEPARTMENT.

REPORT

OF THE

CHIEF MEDICAL OFFICER

FOR THE

Year ending 31st December, 1918.

BRADFORD:
M. BYLES AND SONS, KIRKGATE.

Bradford Health Committee.

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INFANTS' DEPARTMENT,

MORLEY STREET,
BRADFORD.

To the Chairman and Members of the Health Committee :—

Gentlemen,

I herewith present to you my fifth Annual Report (1918) of the work of the Infants' Department.

I would earnestly request you to devote your special attention to the facts and figures submitted in various sections of the report establishing the urgent necessity for the institution of *a comprehensive and efficient Maternity Department.* This, including in its provision all necessary antenatal supervision and treatment will secure attention to the problems underlying defectiveness of congenital, or more properly speaking antenatal, origin. As I have shown in all my previous reports this has been found in each successive year of our work to play a chief part in the mortality and disease of our infants throughout their first year. For the reduction of Bradford's infant mortality and for the successful result of the work of the Infants' Department, the work of such a Maternity Department acting in close co-operation with our own is therefore a primary and most pressing necessity.

In this connection Dr. Stevenson's observations in the Report of the Registrar General for 1917 are of special significance and interest to us. Discussing Prematurity and the other "developmental and wasting causes" of death "mainly affecting early infancy," he says "congenital malformations, premature birth, and atrophy, debility, and marasmus are considerably more fatal in the North than in the South, but not much more so in the city than the country. . . The excess mortality of the North from these causes, as well as from syphilis, points to that part of the country as offering the most fruitful field for the application of the antenatal preventive measures now being so much discussed."* He further says: "If it makes little difference to an infant's chance of survival in the first month whether it is born in the town or the country, it makes a great deal of difference whether it is born in the North or in the South. The bearing of this fact upon the important question . . . of the extent to which the mortality of the first month of life is preventable is obvious, for it may safely be assumed that the standard now prevailing in the South can at least be attained in the rest of the country."†

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* Page xlv. † Page xxxvi.

I would also specially direct your attention to those paragraphs of my report indicating the imperative need for:

(1) *An improved Milk Supply for the infants.* The proper production of the milk at the farm, and its rapid delivery at a low temperature to the infant consumer is the first essential here. In the absence of action to secure this, the return of hot, dry, summer and autumn weather will mean the loss of a large number of infant lives needlessly sacrificed owing to milk infection.

(2) *Provision for both Institutional (whole-time) and Crêche (part-time) care of infants, particularly illegitimate infants, now put out to "nurse," and badly "mothered."* Their much higher death-rate renders such provision one of the essential measures for the reduction of our local infant mortality.

(3) *Increased Infant Hospital Accommodation making available at least* 50 *cots.* The inadequacy of such accommodation has been a considerable factor in the defaulting in attendance at the Clinics of a number of chronically ailing infants, many of whom have subsequently died outside our care.

The problem of "defaulting" is dealt with in Section I. The war, by its call for women's labour and the high wages ruling, has deprived many infants of maternal care and coincidently of the supervision of the Clinics. During the last three years there has been a definite increase in serious disease of antenatal origin among the infants, who for this reason require this supervision more than at any previous period in the history of the Department. A very special and concerted effort is therefore necessary if we are to attain those ends for which our Infants' Department was brought into being, viz., the reduction of the City's infant mortality and the safeguarding of the health of its infants.

To secure these results, in addition to those measures already discussed, a much larger number of infants must be registered early and continue in regular attendance during their first year. This is especially necessary in the case of infants who are artificially fed or delicate or whose "mothering" and home conditions are unsatisfactory, and of infants whose mothers have previously had unsatisfactory reproductive histories from the point of view of mortality; all these unfavourable conditions are for the most part found in close association.

I am confident that the much needed extension of our infants' hospital accommodation, intensive effort in the direction of following-up, the development of our voluntary social work for mother and child welfare (discussed in Section I.), and the active and increasing co-operation of the general community, afford the best hopes of solution of the problem of defaulting.

Adequate laboratory facilities in regard to bacteriology and pathology, arrangements for which are now under consideration, are essential to the work of our infant clinics and hospital. These are urgently needed not only as a guide to the best method of treatment in some of the common diseases of infancy, but as a means of essential research into those fields which are dark or but dimly lighted at present. I earnestly hope that such aid will be very shortly available.

The training of nurses in the hygienic care of infancy and nursing of sick infants has been continued in the Infants' Hospital, but the training of student nurses in the various departments of Infant Health work, including those branches just mentioned, has been greatly limited owing to the lack of a hostel for accommodating these students. We have had, therefore, to refuse, or rather place upon a waiting list the names of a number of eminently suitable and enthusiastic young women desiring to come to us for this training.

I feel very strongly that the, at present, unique opportunity afforded at our Infants' Department for the training and certification of prospective workers in infancy, should not be disregarded. The training of the certificated hospital nurse or midwife can only be regarded as a foundation and provides no qualification for responsible work in the very specialised field of infancy. The practical recognition of the necessity for special training and experience for *all* workers in this field, and equipment of institutions providing facilities for this, are among the first essentials for success in the campaign against infantile mortality.

It becomes increasingly apparent that this success must depend upon concerted effort and organisation of all the necessary forces, both medical and social, and that we require not only equipment but trained combatants, and research providing a much more intimate knowledge of the numbers, disposition, and tactics of the enemy than we at present possess.

I am convinced as the result of the work already done that in so far as future administration and expenditure are undertaken with due recognition of these facts, we may look with the utmost confidence to the future.

Finally I would again say at the close of another year's work that I cannot pay too high a tribute to the devoted and efficient service of the entire Staff of this Department throughout the year.

I am, Gentlemen,
Yours faithfully,
HELEN Y. CAMPBELL,
Chief Medical Officer.

BRADFORD, *March*, 1919.

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CITY OF BRADFORD INFANTS' DEPARTMENT.

ANNUAL REPORT—1918.

The report deals with the 2,172 infants who attended during the year, *i.e.*, with 1,606 infants registered during the year, and 566 infants transferred from the previous year and attending in 1918.

Four Branch Clinics were established in the latter half of the year, but as some of these had only been open for a very short time, it has been thought best to include all figures respecting the infants attending these with those of the infants attending the Central Clinic, and not to give a separate return for them. In any case the infants registered at the Branch Clinics often attend the Central Clinic since the Branch Clinics being open only once a week and the Central Clinic being open at all times, infants requiring attention between sessions at the Branch Clinics are referred there and infants registered initially at the Central Clinic are sometimes transferred to a Branch Clinic nearer their residence.

It will be seen from Table I. that a total of 12,017 infants making 142,950 attendances have been under our care up to date.

TABLE I.

Year	New Cases Registered	Total Attendances	Average Weekly Attendance	Average Daily Attendance
1912	692	4,607	200	40
1913	1,525	19,206	369	74
1914	2,488	31,193	600	120
1915	1,987	28,192	540	108
1916	1,998	23,490	452	90
1917	1,721	19,194	369	74
1918	1,606	17,068	328	65
Totals ..	12,017	142,950		

SECTION I.

PARTICULARS OF INFANTS REGISTERED DURING THE YEAR.

Of the 1,606 infants, 851 (**52·99** per cent.) were Boys, and 755 (**47·01** per cent.) were Girls ; and 48 (**2·99** per cent.) were twin children.

The following table shows the factors influencing the arrival of the infants at the Clinics :—

	No.	Per Cent.
Referred by Women Inspectors	618	**38·49**
Referred by Mothers attending	331	**20·61**
Re-attendance of Clinic Mothers of other years with subsequent children	422	**26·27**
Referred by N.S.P.C.C. and other agencies, neighbours, etc.	165	**10·27**
Referred by Midwives	48	**2·99**
Referred by General Practitioners	22	**1·37**

Ages.—It will be seen from Table II. that the average age of the infants on registration was 2—3 months. Postponement of registration until this age is extremely detrimental to individual infants, and prejudicial to that effectual *preventive* work which is the aim of the Clinics. Not only are over **50** per cent. of the babies already wholly or partially weaned from the breast but many infants who have steadily lost ground since birth arrive in a serious condition of developed disease, a considerable number of these cases having been delivered by midwives and having seen no doctor. The proper training of midwives in the normal development and requirements of the infant during the newborn period, and their ability and leisure to better instruct the mother as to essentials would effect considerable improvement here.

Expert medical examination of all infants whose professional care is to be the responsibility of an Infants' Department at an earlier age than that at which they could be taken to a Centre for the purpose, would, my experience convinces me, be desirable in the best interest of the infants and of preventive work on their behalf. Until, however, larger reforms are possible I feel something material could be done by securing the interest and instruction of practising midwives and their more active co-operation with Infant Health Centres, so that the average

age of registration at these might become at least one month, and an earlier age than this if artificial feeding is in contemplation or the infant does not appear to be thriving.

TABLE II.—AGES ON REGISTRATION—(1,606 INFANTS).

	No.	Per cent.		No.	Per cent.
Under 1 week ..	1	**·06**			
1—2 weeks ..	17	**1·06**			
2—3 weeks ..	62	**3·86**			
3—4 weeks ..	133	**8·28**	Under 1 month ..	213	**13·26**
1—2 months ..	525	**32·70**			
2—3 months ..	306	**19·05**	1—3 months ..	831	**51·75**
3—4 months ..	208	**12·95**			
4—5 months ..	111	**6·91**			
5—6 months ..	66	**4·11**	3—6 months ..	385	**23·97**
6—7 months ..	54	**3·36**			
7—8 months ..	43	**2·68**			
8—9 months ..	33	**2·05**	6—9 months ..	130	**8·09**
9—10 months ..	31	**1·93**			
10—11 months ..	16	**1·00**	9—11 months ..	47	**2·93**

Illegitimate Children.—Of the 1,606 infants 165 (**10·27** per cent.) were illegitimate.

The following table shows that of the total of 745 illegitimate infants under our observation during the last five years, 156 (**20·94** per cent.) have died, whereas of the legitimate infants registered during these years only **8·16** per cent. have died. Therefore, the death rate of the illegitimate babies has been almost two and a half times as high as that of the legitimate.

Year.	Legitimate Infants registered.	Illegitimate Infants registered.	Legitimate Infants dying.		Illegitimate Infants dying.	
			No.	Per cent.	No.	Per cent.
1914	2,329	159	158	**6·78**	12	**7·55**
1915	1,824	163	172	**9·43**	35	**21·47**
1916	1,869	129	158	**8·45**	33	**25·58**
1917	1,592	129	144	**9·05**	35	**27·13**
1918	1,441	165	107	**7·43**	41	**24·84**
	9,055	745	739	**8·16**	156	**20·94**

A very large proportion of these illegitimate infants were congenitally defective, and the environmental conditions of the majority not only tend to diminish their chance of survival but afford them at best the extreme minimum of ordinary infantile health, comfort, and happiness.

State provision for these infants securing to them all not only continued expert medical and general health supervision and treatment throughout their infancy, but proper " mothering " is very urgently necessary and greatly overdue. Further, in view of the special need for it in the case of these mothers, every possible means should be taken to induce them to avail themselves of the antenatal supervision and treatment, provision for which for all mothers cannot be long delayed.

There has been some considerable discussion in regard to the necessity for providing for these mothers and children and suggestions have been made. It is clear to those with knowledge the result of personal experience of a number of unmarried mothers and their babies that the question of how best to safeguard these babies and to assist the mothers is not simple, and will not be solved by any limited scheme, since any such provision must be wide and designed to meet the many and varied circumstances and conditions obtaining in regard to these mothers. It is, however, convincingly clear that once acknowledged to be and assumed as a State responsibility, and handled by those qualified by practical knowledge of existent facts and necessities, such provision would present no insuperable difficulties, and would be effectual not only for the welfare of these mothers and children but of the community to a degree at present not thought of. The present policy of Society and the State, their refusal to recognise and insist upon the rights of these babies, whatever may be said to the contrary, actually places a premium upon the social menace of illegitimacy. To exact from those responsible for the births of illegitimate children the fulfilment of natural obligations for their nurture and survival (giving unmarried mothers all essential assistance to this end) would be on account of the practical difficulties and disadvantages confronting those parents who met these obligations under such circumstances, the best way to diminish the illegitimate birth rate.

To ignore these obligations, the discharge of which the State should surely demand on behalf of all its citizens, to allow these babies to be born, suffer and die in obscurity, is actually to foster in those who most need their development a spirit of indifference to those ideals of home and family upon which the stability of the nation depends. These babies are not only the most helpless and handicapped of all our citizens, but at present the most " wounded " and the most " killed." Their casualty and mortality lists which are so high all over the country could be enormously reduced and at once by public provision for continuous health supervision throughout their infancy, and for securing to them all proper " mothering." It is in regard to the latter, recognising that mother and baby must be kept together wherever possible and as much as possible that the complexity and difficulty of the problem arises.

There are mothers who by reason of mental deficiency or bad character are wholly incapable of undertaking this either wholly or partially even under careful supervision, and for these cases whole-time State " mothering " must be provided for the infants if they are to be saved. There are mothers who are intelligent, solicitous, and in every way capable of entirely and satisfactorily " mothering " their infants, but debarred from undertaking this by reason of the fact that they must be breadwinners for both. The justification of the separation of mother and child in such cases in view of the loss to the latter involved in this, for economic reasons, could never I think be established in a truly civilised community which recognised and properly assessed the value of its motherhood and of its child citizens.

Between these two groups there are mothers, perhaps a majority, many of whom are industrially employed and whose infants are at present artificially fed, who could give satisfactory part-time care to their babies if properly conducted crêches were available for week-day "mothering," and if the babies and the mothers and their homes were continuously under skilled medical supervision and health visitation respectively.

" Hostels " specially provided for unmarried mothers and their babies will meet the case of some of the mothers, and in so far as they enable them to undertake the entire care of and breast feed their babies these would be valuable. From my observations and enquiries of such mothers, I am convinced, however, that a certain not inconsiderable number will not avail themselves for any length of time of such institutions. There are married mothers, widowed or separated, living in homes of their own, and unmarried mothers living with relatives or friends. Further, especially in industrial towns, the possession of a factory trade and lack of acquaintance with and dislike of housework as an occupation, a spirit of independence, dislike of the restrictions of institution life, and perhaps most of all a diffidence about living at a special institution definitely provided for such cases and publicly " labelled " as such, are all factors which I believe will often tend to be deterrent. However desirable in some of these cases, *e.g.*, young mothers of weak character and with, as too often, unsatisfactory home training and influences, the continued supervision of such hostels may be, there can be no compulsion. For all these reasons, and knowing these girls and how responsive many of them are to sympathy and suggestion, I would strongly urge in addition to institutional provision for mothers and babies provision for a special degree of that supervision in their own homes which a Health Visitor of the best type could afford, coupled with " Centre " supervision of the infants, and Crêche accommodation.

An analysis of the social and other factors concerning the illegitimate infants who died during the year is given in the section on infant mortality. While these represent perhaps the worst cases, the results show the state of affairs existing under our present system of neglect of this problem or at least absence of any comprehensive and constructive national measure to deal with it.

Children Put Out to " Nurse."—Of the 1,606 infants, 125 (**7·78** per cent.) were " nurse " children at the time of registration. This figure, however, gives no indication of the whole number of infants who were " nurse " children at a later period of their first year. Many of the mothers at the time of registration of the young baby had then definitely decided upon returning to work at once. A considerable number of infants default in attendance at the Clinic just because their mothers have returned to work, but figures for this cannot be given since we have been unable to obtain systematic information of the infants after they leave the Clinic.

In 96 (**76·80** per cent.) of the 125 cases the children were put out to " nurse " because the mother had returned to work, in 19 (**15·20** per cent.) this was on account of the mother's illness, and in 10 (**8·00** per cent.) on account of her death. In 87 (**69·60** per cent.) of the cases in which the mothers had returned to work, the infants were illegitimate.

" Nurse " children, though their need for supervision is the greatest, benefit least from the provisions of the Infants' Department. They are exceedingly bad attenders. The " Nurses " mostly hold the view that the extra time and trouble involved in regular attendance at the Clinic is no part of their bargain with the mothers, and the difficulty experienced by the mother in securing a " nurse " at all usually makes it in practice impossible to recommend or effect a change of " nurse " where, as so frequently, the " nurse " refuses to attend or attends and disregards all advice and instruction given to her.

With very few exceptions the women who undertake to " nurse " children are *the* most unsuitable for and incapable of the duties involved. Often they are old women, sometimes ill and considerably disabled, and these are often little more satisfactory if, as not very infrequently, they happen to be paternal or maternal grandmothers of the infants. Younger and active women in a city where opportunity for their industrial employment is abundant prefer such employment, while the better type of married women with children do not add to their income in this way. Hence the old and often infirm women, and those whose health or mental capacity is too defective to allow of their earning in any other way, largely undertake this work; I have known infants "nursed" by foster-mothers who were epileptic and mentally deficient, who were totally deaf, and who were suffering from active tuberculosis and cancer.

Not infrequently, in the case of an illegitimate baby the "nurse" is the landlady with whom the mother lodges, and she charges the mother for "nursing," board and lodging a sum equal to practically the whole of her earnings, and expects her to provide food and clothing for the infant in addition.

The difficulty of dealing with these cases, particularly sick or delicate infants as these often are, under such conditions, and the utter impossibility of doing any preventive work on their behalf from the Infant Clinics must be obvious. The necessity, especially in an industrial area such as this for provision for the proper care of the infants of mothers either industrially employed, or unable by reason of death, illness, mental defect, or bad character and maternal indifference, to properly "mother" their babies, is undeniably great and urgent. Two separate kinds of provision are equally necessary in this connection.

Crêches (accessible to the mothers' homes and to the district Infant Centres so that the infant may have the same continued supervision and treatment as that afforded those attending the Clinics) are necessary to meet the case of those employed mothers, married or unmarried, who can satisfactorily undertake the part-time "mothering" of their babies.

Institutional provision as by an Infants' Home is also greatly needed for the whole-time care of healthy babies for whom either temporarily or permanently during their infancy, proper "mothering" is not available. We have frequently in our work at the Clinics encountered the urgent need for such provision, and have been appealed to to give such assistance by parents often of the most respectable working-class. Such need arises in cases where the infant loses its mother and no relative can be found to "mother" it, or where the mother is ill and absent in hospital or sanatorium. It also arises in the case of the infants of mentally defective or unimprovably bad mothers, and of "nurse" children of employed mothers who are indifferent and unsatisfactory, married or unmarried, or of those of unmarried mothers obliged, as in domestic service, to live with their employers.

In short, my experience has convinced me that the provision of well conceived and well administered Crêches in our industrial areas, and of an Infants' Home, preferably in pure air beyond the City's limits, are essential inclusions in any public service which hopes to secure the welfare of infants. Such provision would enable many babies during their all-important first year to thrive in healthy surroundings and under proper conditions of training and management, which are at present quite unobtainable for them.

An Infants' Home is also much needed for the reception of infants discharged from the Infants' Hospital as no longer requiring hospital nursing and treatment, but needing for a longer or shorter period better care and surroundings than slum mothers and homes can afford them.

In my belief institutional provision for unmarried mothers with their babies would be much more advisably provided in association with such Infants' Homes than as separate " Hostels for Unmarried Mothers."

Health of the Parents.—Records based upon enquiry and observation (practically invariably of the mother and occasionally also of the father) are made of the health of the parents of all the infants under our care, and so far as enquiry can elicit this, of the immediate family history of both parents, *i.e.*, of their parents and brothers and sisters. No complete medical examination of the mother can be made at the Clinics for obvious reasons, nor have we access to any record of such in reference to either parent, and therefore the return " unhealthy " is necessarily confined to the statement of the number of those parents who were suffering from definite illhealth or disease of a chronic nature.

Of the 1,606 mothers 814 (**50·68** per cent.) were unhealthy ; of 51 (**3·18** per cent.) the health was unknown ; while 128 (**7·97** per cent.) were mentally defective or abnormal. Of the fathers, 585 (**36·43** per cent.) were unhealthy, in most cases according to the mothers' statements, and of 209 (**13·01** per cent.) the health was unknown. Of the 1,606 infants, 10 of the mothers were dead on registration of the infants and 3 died subsequently, while 21 of the fathers were dead (12 being war casualties) and 2 died subsequently to registration of the infants.

In the case of a not inconsiderable number of those parents who were unhealthy, the history was given of having been ailing or " doctoring " all their lives—" as long as they could remember."

Reproductive Histories of the Families of the 1,606 Infants.—An analysis of the previous reproductive histories of the mothers of the

1,606 infants registered during the year (see ensuing table) shows that from the families of these 1,606 mothers not yet old but all of child-bearing age, a total number of 1,227 lives had already been prematurely lost, antenatally or postnatally, to the community. It must, however, be noted in this connection that 522 (**32·50** per cent.) were mothers with no previous pregnancies ; and that 457 (**28·45** per cent.) were mothers with previous pregnancies who had lost no children antenatally or postnatally. Therefore, if these two groups of mothers be deducted, as they must be, from the 1,606 mothers, it will be seen that the 1,227 lives prematurely lost were really shared among 627 (**39·05** per cent.) mothers or families.

This indicates such a terrible wastage of child life that its recognition should force us to undertake serious enquiry into the conditions existing which are so inimical to that seeing daylight in our working-class homes. It further seems to indicate the existence of a special factor or factors which are operating in these special families, since the ordinary social and industrial factors, conditions of "mothering," artificial feeding, etc., must be taken to be exerting in the average an equal influence in all the families. If this be conceded, it should be proportionately easier to approach for purposes of investigation and prevention, these special factors, which are operating so fatally against the individual and national interests.

It is surprising to encounter, as I usually do, in the course of my professional work, the attitude of fatalism or acquiescence of the parents, whose reproductive histories have been so imperfect, either from the point of view of mortality or of delicacy and disease in the surviving offspring. There are various reasons for this, but only the general awakening of an ideal of personal and public *health,* and higher ideal of the individual responsibility of parenthood to the offspring and the community, which will so much benefit the individual and the State, can radically alter this attitude to one of active enquiry and energetic action to secure the remedy.

Reproductive Histories of Parents (1,606).	No.	Per cent.
Mothers with no previous pregnancies	522	**32·50**
Mothers with previous pregnancies who had lost no children antenatally or postnatally	457	**28·45**
Mothers with previous pregnancies who had lost children antenatally or postnatally	627	**39·05**

Of these 627 :—

181 (**28·87** per cent.) had lost 248 children over one year among them.

351 (**55·98** per cent.) had lost 538 infants under one year among them.

180 (**28·71** per cent.) had had 283 miscarriages among them.

89 (**14·19** per cent.) had had 158 stillbirths among them.

Therefore, the 627 mothers had lost among them 1,227 lives prematurely, which with the 65 infant deaths occurring among these families during the year, makes a total figure of 1,292, which represents an average of **2·06** *lives per family.*

It will be seen that as in the case of the analysis for the previous year the postnatal loss is nearly twice as great as the antenatal.

Relative Fertility of Parents.—The 627 families in which the mothers had previously lost children antenatally or postnatally had had in addition to the 1,227 lives lost as above, 1,672 children among them who were living, apart from the infants brought up during the year, *i.e.*, an average of **4·62** pregnancies per mother. The 457 families whose mothers had had previous pregnancies but had lost no children antenatally or postnatally had among them 932 living children, apart from the present infant, *i.e.*, an average of **2·04** pregnancies per mother. The fertility of the parents with bad reproductive histories will, therefore, be seen to be considerably greater than that of parents with good.

"Mothering."—With regard to the "mothering" of the 1,606 infants, in 581 (**36·19** per cent.) of the cases this was good ; in 416 (**25·90** per cent.) it was fairly good ; and in 609 (**37·91** per cent.) it was not good.

Bad "Mothering" or the infant's lack of good "mothering," as met with in the actual, practical work of an Infant Health Centre may be due to (*a*) ignorance of mothercraft, (*b*) low standard of character and lack of ideals in mother, (*c*) physical or mental inefficiency of mother, and while these factors to some extent overlap, our main difficulty undoubtedly lies with the mothers of group (*b*). These can only be improved, if at all, to a very limited degree, in my belief, at such a Centre, any influence which may be brought to bear upon them during their brief and infrequent visits there being insufficient to secure result. One is forced to think retrospectively in such cases, of the earlier influences in the home and industrial environment, and to seek *here* prevention for the future.

We are also confronted with the problem of the actually mentally deficient, of the more or less feebleminded, and of the deranged epileptic or chronically alcoholic or otherwise mentally abnormal mother. The bad "mothering" of these cases is quite unimprovable at the Infant Health Centre, and a very definite if not relatively very large percentage of our infants are suffering severely as a result of dependence upon such "mothering." The problem of dealing with these mothers is obviously difficult, but it is one which the better care of infancy demands a solution of, and which this better care when universally provided, will itself largely solve.

Not a few infants are indirectly suffering from lack of good "fathering" owing to (*a*) low standard of character and lack of ideals in father, leading to bad habits of intemperance, laziness or withholding and diverting elsewhere a proportion of earnings essential to family maintenance, and (*b*) physical or mental inefficiency.

It must be obvious that many of these defects in the postnatal environment of our infants cannot be removed by the Infant Clinic alone, and I feel very strongly that the efforts of the latter must be increasingly and actively supplemented and strengthened by those of the Women Inspectors of the Health Department. I believe further that when the general community fully appreciate the value of its infant life and the essential preventability of infantile disease and death, the influence of a strong public opinion will operate beneficially here.

The preventive ideal with its immense possibilities in earlier childhood and the utilisation of doctors and nurses in its realisation is so dimly understood as yet by the community at large that one can scarcely wonder if many of these mothers should seem slow to "sense" it. One looks perhaps especially to those voluntary workers in the field of social service for mother and child welfare to prepare the soil and foster the growth of the seed sown at the Infant Clinics. I am convinced that such work making available for all these mothers much-needed change, amusement, rest, social activities and wider interests, should be more developed in the future in close co-operation with the Health Services, and that it is an essential department of our national effort for the prevention of infant mortality.

There are mothers in our industrial areas who working day in day out in the factories from their early teens have had scant opportunity for the acquirement of the qualifications and to a great extent characteristics requisite for successful child nurture, and housekeeping on a slender and uncertain allowance, both of which in the case of the average working-class mother are undertaken in circumstances of peculiar difficulty. But for some of the mothers whose "mothering" is unsatisfactory, very especially those of group (*b*), much more than, and something quite other than, advice and teaching in mothercraft is necessary. The lives of these mothers have been and are being spent in an environment possessing little or nothing to stimulate and inspire imagination and develop intelligence and ideals, and in the absence of some development of these the Infant Clinic sows its seed in barren soil. The effect of this purely " mental " deprivation together with the discouragement and degradation often resulting from material privations have no relation in the great majority of cases to *vice*—the instinctive mother-love which is so seldom lacking, and sometimes unselfish even if misguided effort supply abundant proof of this.

Knowing these mothers so well by long acquaintance I feel very strongly that developed schemes of social work which recognise this deficiency and contrive to secure for them not merely technical instruction in mothercraft, but wider interests leading to a larger mental horizon, and some of those influences conducing to a higher capacity and quality of the imagination, are essential to the solution of much of the bad " mothering " of the slums. Further, if thoroughly democratic in conception and affording that real recreation and social life so much needed by our working-class mothers, if rather the " Mother's Club " embracing many activities than the " Mother's School," these voluntary schemes must be to many in the first instance at least, more attractive than the Health Centres, and hence one feels that they might considerably aid in drawing and keeping mothers in attendance at the Centres whose infants most need their supervision.

While research into the causes of infant mortality and disease like all supervision and treatment of maternity and infancy whether in health or sickness at the Centre or in the home, is necessarily a professional responsibility which must devolve upon trained and co-ordinated workers, it cannot be too well realised that the root causes of infantile mortality and disease lie widespread and deep in our social system, *i.e.*, in the environment and the life and habits of the people. As such the responsibility for preventive measures necessarily belongs not to one but to many sections of the community and demands concerted effort and " social " as truly as " health " service.

The Problem of Defaulting.—The defaulting of mothers or " nurses " bringing up infants the previous reproductive histories of whose mothers are bad from the point of view of mortality, or sick infants, especially those suffering from congenital syphilis, is a serious matter, and one which merits careful consideration both from the point of view of the prevention of infant mortality and child degeneracy, and of the probable transmission of a disease involving such large issues from a racial point of view.

The reasons for defaulting either for long periods or permanently in attendance at the Clinic are various. A very common one which has been a large factor during the war is the return of the mother to work at the mill, the child being put out to " nurse " and ceasing to attend the Clinic. Other cases have defaulted owing to the indifference of the mother or her impatience of waiting for often too necessary instruction, or her view that insufficient material benefit was gained by attendance. The improved economic condition of many of the families which has been so marked a feature during the war and which has resulted in a large decrease in the number of necessitous mothers and infants receiving free feeding has undoubtedly augmented the number of mothers defaulting for the last-named reason. In the case of mothers defaulting with sick and delicate infants, in some cases the mothers are I think unable to appreciate the significance of the infant's condition, while an even larger number of mothers are unable to appreciate the still greater preventive value of the continued medical supervision and treatment afforded at the Clinic, in the case of the healthy infant. The only hope of solution in these cases would seem to lie in sufficient and efficient following-up, the provision of crêches, the voluntary social effort already referred to, and in the provision of our much-needed extra hospital accommodation. A very large number of the ailing babies would undoubtedly have remained under our care had we had sufficient hospital cots to receive them.

Mode of Feeding.—With regard to the feeding of the 1,606 infants on arrival, it will be seen from Table III. that only 800 (**49·81** per cent.) of the whole were entirely breast-fed on registration at the Clinics, 806 (**50·19** per cent.) being wholly or partially artificially fed, of whom 503 (**62·40** per cent.) were artificially fed entirely. In the same table the reasons given by the mother for commencing artificial feeding in all these cases, together with the ages at which it was begun, are tabulated. Of the 806 cases it will be seen that in 449 (**55·70** per cent.) artificial feeding had been *begun under one month of age.* It will further be noted that *premature failure of the breast milk* was the reason given in 525 (**65·12** per cent.) of the 806 cases.

In Table IV. the change of feeding after registration of those infants in whom change occurred, who were wholly breast-fed on registration is shown, together with the reasons for the change and the ages at which it took place.

A good deal of treatment of nursing mothers has been undertaken at the Clinics during this as previous years. Of the 1,103 nursing mothers, 629 (**57·03** per cent.) were treated at the Clinics. Of these, 179 (**28·45** per cent.) required treatment of the breasts, and 450 (**71·55** per cent.) were treated for their general health with a view to improvement of the breast milk secretion.

The following are the figures for the number of infants who were entirely breast-fed on registration during the past five years :

Year.	No. of Infants registered.	Infants entirely breast-fed on registration.	
		No.	Per cent.
1914	2,488	1,177	**47·27**
1915	1,987	929	**46·76**
1916	1,998	871	**43·59**
1917	1,721	835	**48·51**
1918	1,606	800	**49·81**
Totals	9,800	4,612	—

While it is satisfactory to note an increase of 2½ per cent. in the figure for 1918 over 1914, it is I think clear that the tendency of this figure, applying to 4,612 infants, to maintain a fairly uniform level during these years demonstrates that it is apparently not materially affected by such factors as lesser or greater economic prosperity, more or less industrial employment of mothers, the provision of municipal feeding of necessitous nursing mothers, and the educative efforts made by the Health Visitors and the staff at the Clinics. If so, then logically there must be other factors at work in reducing the number of breast-fed babies which such remedies as we have applied have failed to reach.

In view of the inestimable advantage to an infant of a sufficiency of breast milk to nourish it entirely for the first eight or nine months of life, and of the menace of artificial feeding in the case of the average working-class baby under present conditions, the fact that over 50 per cent. of the infants (registered in each year at the early average age of 2—3 months) were on arrival at the Clinics already receiving artificial feeding, and that in over 50 per cent. of these cases this dated from the first month of life, is a matter of grave concern.

I was much impressed at the outset of my professional work with the need for exact knowledge on this point since this is clearly essential for the successful application of remedies and of prevention. To this end detailed and careful observations have been systematically made and recorded at the Clinic since the inception of the work of the Department.

An accurate knowledge is first of all necessary of the actual number of babies who are artificially fed (wholly or partially) at various ages in the first year, and the reason why and age at which artificial feeding is commenced in these cases.

Tables III. and IV. show the results of enquiry into these special points in the case of 1,606 infants registered during the year.

Table V. shows the result of a special enquiry into the reasons for commencing artificial feeding in the case of the 7,701 artificially fed babies under the care of the Department during the last five years.

It will be seen that of all the reasons for adopting artificial feeding, premature failure of the breast milk occupies the first place, and of all the 7,701 cases **71·52** per cent. were put on to artificial feeding for this reason.

The statement is often made that the industrial employment of mothers is a chief factor in depriving the infant of breast milk, and since many mothers are industrially employed in cities where opportunity for this offers itself, and many babies are here found to be bottle-fed this deduction is easy on superficial observation. The figures show, however, that this was the reason in only **5·09** per cent. of the cases. Many of the mothers did indeed engage in work outside the home during the child's infancy, but failure of the breast milk and not going out to work was the reason of the bottle-feeding. Reference to Table III. showing that **55·70** per cent. of the infants were put on to artificial feeding under one month of age proves that the artificial feeding began in a considerable number of the cases before the mother had had time to return to work. Mothers married or unmarried do not return to work before the infant is a month old and many married mothers not until the second or third month.

The mothers in general begin to supplement the breast-feeding by artificial food because the infants are not satisfied. In a large number of these cases in which the lactation has been carefully observed and as fully as is possible at an Institution only visited periodically by the mothers, there has been definite proof that the normal secretory activity of the breasts was absent, usually gradually diminishing until non-existent. In some cases undoubtedly, fretful and incessantly restless infants not thriving, have been wholly or partially weaned by the mothers who have not sought medical advice, owing to their very common mistake where babies are definitely ill, of ascribing the infant's crying to hunger instead of to illness. In such cases the mother's milk does very often seem to diminish coincidently, and I am convinced in these cases that the worry and exhaustion consequent upon the infants' condition, and loss of sleep owing to its constant crying day and night, re-act upon her in the direction of lessening the supply.

In other cases, those of young infants not thriving and usually congenitally defective, presenting symptoms of gastro-intestinal disturbance coupled with constant crying—I do not refer to cases of dyspepsia due to overfeeding—the trouble is sometimes ascribed, by no means only by the mother, to unsuitability of the breast milk, and such cases account for many of those returned as artificially fed because of " breast milk disagreeing." It is the baby not the breast milk which is at fault in these cases, and by weaning the infant is deprived of what is to it a peculiarly priceless possession. The necessity for weaning on account of " disagreement of the breast milk " is of extremely rare occurrence, though where it exists it is obvious and the weaning essential.

Excluding then the above types of cases in which a continued supply of breast milk might have been available had the infant not been weaned in error, we are left with a majority of cases in which the secretion of milk undoubtedly fails, and this in many cases despite the most persistent endeavour to retain and increase it by all the measures possible of adoption at the Clinics.

It is quite obvious that systematic, thorough research into this question is necessary since unless we can establish definitely the cause or causes of this premature failure of the milk any remedy applied must be purely speculative, and prevention impossible.

Much time has been expended in the Clinics in eliciting facts from the nursing mothers and in making systematic observations of the mothers' breasts and nipples, and in many cases of the actual suckling process of the infants. The examination of the breast milk for its fat percentage has extremely rarely demonstrated any abnormality here. " Test feeds " to discover the quantity of milk obtained at a feed were at one time extensively undertaken but abandoned as unfortunately no reliance can be placed upon these under the conditions obtaining in an *externe* department or upon a single test in the 24 hours.

In investigating the causes of this premature failure it would seem to be natural to first of all direct enquiries to those social and hygienic conditions of the mother's life which seem to be essential to a satisfactory lactation. These are mainly a normal state of health and vigour, due exercise but absence of physical overstrain, and of nervous worry and depression or excitement, a good and sufficient diet with abundant fluid, and a mental attitude which is truly maternal in its desire to nurse and intention to make every effort essential to the fulfilment of this obligation, recognised as such.

The results of such enquiries at the Clinic, which are recorded in every case, show that absence of one or more of these necessary conditions is the rule. The mother's health is frequently bad, **50·68** per cent. of the mothers of all the infants registered during the year, complained and presented evidence of this. Many of these mothers are suffering from chronic illhealth, some are suffering from obstetric conditions dating from the confinement. Not a few mothers complain and show evidence of lack of health and vigour owing to a too rapid succession of pregnancies and confinements though the actual number of children in the family may not be large.

A considerable number of mothers of families are overworked, hence physically and nervously exhausted as the result of the incessant work and worry incidental to caring for home and family with insufficient house room in proportion to the size of the family and absence of all labour-saving equipment. The average working-class mother upon whom unaided fall all the duties of housework, cooking, laundry, mending, shopping, disbursement of all the family expenditure, and child care, is occupied incessantly and insistently even when her family consists of only two young children and an infant, and when it is larger than this she is in general over-worked and over-tired. Such mothers who have often satisfactorily breast-fed the earlier children are unable to do so under these conditions. Many mothers who secrete plenty of breast milk while in bed begin to lose it after resuming as they so often do too early, their ordinary duties. It is a common complaint that there is little or no milk secreted for the baby on "washing-day." Illhealth or the additional strain of nursing a sick husband, child, or relative, also considerably adds to the nursing mother's overwork and strain. Physical overstrain, the result of overwork cannot be held to be a factor influencing the failure of the milk in the case of young mothers of first babies in whom this is also only too common, and here other factors must operate, chiefly I think perhaps, inadequate diet and absence of the necessary "mental attitude" referred to, and sometimes poor health.

With regard to the diet of the nursing mother this is in general inadequate, often highly so. Cases of actual or relative poverty are aided by the provision of the municipal free and assisted dinners or of milk, oatflour, and dried separated milk, in cases where the mother is unable to avail herself of the dinners. The municipal provision of one good hot meal including proteid food for five days in the week is valuable but obviously can only be regarded as an aid, and as supplying a part of the nourishment necessary for the nursing mother during the 24 hours, and unfortunately the supplementary home dietary is usually very inadequate. While cases of actual poverty have greatly decreased during the war, and the economic condition of the mothers has in many cases been remarkably improved, many soldiers' wives with families whether aided or not by the Local War Fund have on account of the high cost of living been relatively poor though above the scale for public assistance.

Having made allowance for all these cases in which poverty may be held to operate, one is bound to say that lack of skill, the lack of domesticity which is so evident in an industrial town largely employing women's labour from an early age, is, quite apart from lack of means, very largely the cause of inadequate feeding of the nursing mother. It is especially noticeable in the case of the young mother of a first baby ; the mother of a small family is bound to do more or less cooking.

It will be seen that 7 per cent. of the cases in Table V. were artificially fed on account of trouble with the breasts or nipples, 4·18 per cent. of these being " defective nipples."

Defective nipples in which the defect has not been sufficiently gross to attract attention, and which are not included in the above table, are not very infrequently discovered in mothers whose milk has failed or is failing, and I think that this is probably a factor in these cases, since the child fails to properly empty the breast and supply the necessary stimulus to its activity. The pressure exerted by the cheap, ill-constructed corsets with stout high busts so commonly seen, may, especially during the developmental period, aid in the formation of these deformities. In cases of inflamed or cracked nipples which are so often the cause of inflammation and suppuration of the breasts, the nipples are often defective, some naturally though quite abnormally fissured. There are different kinds of defect and the condition is I think sufficiently common to be worthy of study. The reprehensible practice so commonly adopted here by midwives, maternity helps, grandmothers, etc., of forcibly squeezing the enlarged breasts of young infants presenting the almost invariably quite harmless phenomena of " Mastitis of the newly-born," I believe, but obviously have no data to establish this, may underly some cases of inability to suckle in later life. We have seen cases in which following this practice, definite suppuration had developed, and that this would leave permanent ill-effects seems unquestionable.

Probable Preventive Measures.—The care of the health of our potential mothers (during earlier and industrial life) and of mothers during the period of expectancy and afterwards is I am confident one of the very first and most essential requirements of our provision for child health and welfare. Apart from those cases of chronic illhealth, often serious, and sometimes dating from childhood, young millhands, bringing up their first babies, who are anæmic and lacking in vigour, often give a history of anæmia, tiredness, and generally indifferent health for some years before marriage. The correction of long hours and too early start in industrial life, of bad feeding, inadequate health supervision and other factors such as unsuitable clothing (page 28), which those responsible for adolescence and industrial health will take cognisance of in the future should send these young mothers forward in a state of higher fitness for the functions of maternity.

Provision for the skilled supervision, all necessary treatment and the hygienic instruction of the expectant mother, detecting causes of chronic ill-health, and securing her better preparation for suckling and motherhood generally, would I feel secure more breast feeding. The skilled care of lactation by well-trained midwives, and the provision of all medical attendance necessary to secure an easier confinement and more relief for the mother than she now experiences in many cases of labour, and to ensure normal recovery from confinement would, I feel sure, definitely diminish the number of cases in which the milk now fails so early. The provision of "home helps" during later pregnancy and lying-in to secure more rest and better feeding of the mother are also, apart from the supply of meals for necessitous cases, measures which I feel confident would largely increase the number of breast-fed babies.

The early and continued supervision of the infant at a Health Centre securing not only the expert oversight of lactation, but the early detection and treatment of disease and causes of incessant restlessness and crying, would I have no doubt because of their tendency to prevent unnecessary weaning and the reaction of these conditions in the infant upon the mother's nervous health and breast milk secretion, preserve the milk for some babies.

As to the nursing mothers diet, to arouse many mothers, especially young mothers, to the importance of making better use of the means they have for feeding themselves and their families is I think one of our most difficult but pressing problems.

Better housing conditions and equipment, and the general establishment of nursery schools, apart from their value to the children, will greatly reduce the factor of overwork and physical strain in the nursing mother.

Under conditions of continued over-exertion, worry, under-feeding, and ill-health such as so frequently obtain among these mothers, the dairy cow would soon cease to be remunerative to the farmer, and one would think would be unable to feed her own calf, and the human mother must re-act far more to them than the cow. It seems logical to believe and hope, therefore, that in their amelioration or prevention lies the solution of at any rate a considerable part of the problem of the premature failure of the breast milk. The successful results reported by Continental observers and in this country by Dr. Truby King in regard to the preservation of the breast milk in the case of mothers taken into institutions for mothers and babies where these adverse conditions are absent, should lend support to this view.

General Development

Weight.—The actual weights of the infants on registration are given in Table VI. The average weights at different ages on arrival are, particularly at the later months of the first year, below the stated average for normal infants, as in previous years.

In view of the unreliability of the weights alone as a true criterion of nutrition, the nutrition of the infants as observed on registration has as usual been separately given (Table VII.). Well-covered babies are included in the column "Normal Nutrition." Only marked cases of malnutrition such as atrophy and marasmus, are included under the heading "Bad Nutrition." Under "Subnormal Nutrition" are returned those cases which could not fairly be included in either of the other two columns. Since an infant's nutrition may be, and not infrequently is normal as to quantity while very deficient as to quality, the above classification referring only to the "quantity" of the body-covering tissues, is insufficiently comprehensive in those cases returned as "Normal Nutrition"; but to give this distinction would have involved a confusing amount of sub-classification. Well, or fairly well, covered infants may be exceedingly soft-fleshed or show definite signs of abnormal nutrition of tissues other than the subcutaneous, while an undue proportion of fat to muscle is abnormal.

It will be noted in the following table that the number of infants presenting defects and diseases increases with the degree of malnutrition :

TABLE VII.

State of Nutrition	No. of Infants		No. of these Infants with diseases or defects		No of these Infants with no diseases or defects	
	No.	Per cent.	No.	Per cent.	No.	Per cent.
Normal ..	778	**48·44**	695	**89·34**	83	**10·66**
Subnormal ..	384	**23·91**	358	**93·22**	26	**6·78**
Bad	444	**27·65**	442	**99·55**	2	**·45**

Length.—While the individual weight of a normal and well-nourished infant at birth is so variable that a standard weight cannot be accurately stated, though an average normal increase during the first year can be, the actual length of a normally developed infant at birth is a far more constant factor. A minimum normal length at birth (20 ins.) can be stated, and an infant whose "height" is below this enters the world in a state of imperfect or *under* development; and in the great majority of cases is at subsequent months in infancy found to be correspondingly below the average length for its age. The length of an infant is therefore a very valuable criterion by which to judge of its state of development *at birth,* and to ascertain the existence of congenital defectiveness, though such may, of course, exist in the absence of this particular factor.

The length of all infants is carefully measured at the Clinics, a specially designed apparatus being used, which ensures accuracy in all cases, and a return of the lengths of those infants who on registration were below the normal is given on page 38.

Abnormal or Defective Infants.—Of the 1,606 infants registered during the year 1,495 (93·09 per cent.) were, as will be seen in Table VII., found on examination at the time of registration to be suffering from some disease or defect other than the symptomatic condition of malnutrition. If to this be added the 2 cases found to be in a state of bad nutrition without presenting on that date any other classifiable defect or disease, the figure for abnormal or defective infants on registration will be seen to be 1,497 (93·21 per cent.) The return of the diseases and defects which are shown in Table VIII. includes, as last year, all minor ailments as well as more serious diseases. There is a slight increase (·82 per cent.) in the number of infants found abnormal on registration as against that for 1917, but there was an increase of 5·11 per cent. in 1917 over 1916, and an increase of 8·95 per cent. in 1916 over the figure for 1915.

We have been struck by the very large proportion of mothers bringing up defective infants, in some cases suffering from serious disease, who have quite failed to recognise the significance of the infant's condition, often ascribing it to some trivial infantile ailment, and in some cases being under the impression that the infant was actually thriving. This fact, among others, in my opinion, clearly establishes the necessity for infant supervision centres, which shall supervise throughout their first year, not only infants brought up because they are ailing, but infants apparently, or held to be, healthy.

TABLE III. FEEDING ON REGISTRATION OF 1,606 INFANTS.

Breast Fed entirely .. .. 800 (**49·81%**)
Breast and Artificial .. .. 303 (**18·87%**)
Artificially Fed entirely .. .. 410 (**25·53%**)
No Breast Milk ever secreted .. .. 67 (**4·17%**)
Normal Feeding at 8 or 9 months .. .. .. 26 (**1·62%**)

STATED REASONS FOR COMMENCING ARTIFICIAL FEEDING BEFORE REGISTRATION WITH AGES OF CHANGE.

	Under 1 week.	Weeks.				Months.										Totals.	Per cent.
		1	2	3	4	1	2	3	4	5	6	7	8	9	10		
Premature Failure of Breast Milk	61	75	80	50	—	136	54	46	10	6	7	—	—	—	—	525	65·12
Only 1 Breast Secreted	2	—	2	1	—	8	—	—	—	1	—	—	—	—	—	14	1·74
Defective Nipples	9	1	1	1	1	1	—	—	—	—	—	—	—	—	—	14	1·74
Old Mammary Abscess	2	—	1	—	—	1	1	1	—	—	—	—	—	—	—	6	·74
Present ,, ...	4	—	1	—	1	1	1	—	—	—	1	—	—	—	—	9	1·12
Child sent to a Hospital	2	3	—	—	—	1	—	—	—	—	—	—	—	—	—	6	·74
Inability to suck	7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7	·87
Milk disagreeing	8	8	4	4	—	14	8	—	—	—	—	—	—	—	—	46	5·71
Mother's death	3	—	3	—	—	2	2	—	—	—	—	—	—	—	—	10	1·24
Mother's illness	21	3	6	3	—	7	4	—	2	—	1	—	—	—	—	47	5·84
Mother industrially employed or intended to be	1	3	5	5	—	12	3	—	—	—	—	—	—	—	—	29	3·60
Natural Failure of Breast Milk	—	—	—	—	—	—	—	—	—	—	—	—	9	11	6	26	3·23
No Breast Milk ever secreted	67	—	—	—	—	—	—	—	—	—	—	—	—	—	—	67	8·31
	187	93	103	64	2	183	73	47	12	7	9	—	9	11	6	806	100·00

1,103 Nursing Mothers—
629=57·03% treated: { Breasts .. .. 179 28·45
{ General Health .. 450 71·55

TABLE IV.—CHANGE OF FEEDING AFTER REGISTRATION WITH AGES AND REASONS FOR CHANGE.

800 Cases Breast-fed on Registration—524 cases changed to whole or partial artificial feeding.

	Under 1 week.	Weeks.				Months.										Totals.	Per cent.
		1	2	3	4	1	2	3	4	5	6	7	8	9	10		
Premature Failure of Breast Milk	—	2	3	13	3	19	83	68	56	36	35	4	—	—	—	322	40·25
Only 1 Breast Secreted	—	—	—	—	—	1	2	2	2	1	—	—	—	—	—	8	1·00
Defective Nipples	—	—	—	1	—	—	3	1	1	—	—	—	—	—	—	6	·75
Old Mammary Abscess	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	1	·12
Present Mammary Abscess	—	—	—	—	—	—	1	2	—	2	—	—	—	—	—	5	·63
Child sent to a Hospital	—	—	—	—	—	—	1	2	—	—	—	—	—	—	—	3	·38
Inability to suck	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	·12
Milk Disagreeing	—	—	—	—	—	2	1	—	—	—	—	—	—	—	—	3	·38
Mother's illness	—	—	—	1	—	2	6	2	3	5	4	—	—	—	—	23	2·87
Mother's death	—	—	—	—	—	—	1	1	—	—	1	—	—	—	—	3	·38
Mother industrially employed or intended to be	—	—	—	1	—	1	11	2	1	—	—	—	—	—	—	16	2·00
Natural Failure of Breast Milk	—	—	—	—	—	—	—	—	—	—	—	—	49	67	17	133	16·62
	1	2	3	16	3	26	109	80	63	44	40	4	49	67	17	524	65·50
Under observation (breast-fed) on 31st December, 1918																65	8·12
Defaulted or died																211	26·38
																800	100·00

TABLE V.—Analysis of Reasons for Artificial Feeding of 7,701 Infants.

Year	Infants under Observation	Number totally or partially artificially fed	Per cent.	REASONS																	
				Premature failure of breast milk		No breast milk secreted		Defective Nipples		Old or new Mammary Abscess		Baby ill*		Milk disagreed		Mother working		Mother ill		Mother dead		Various	
				No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.
1914	3,033	2,188	**72·14**	1,659	75·82	65	2·97	54	2·47	42	1·92	40	1·83	37	1·69	129	5·90	130	5·94	16	·73	16	·73
1915	3,010	1,519	**50·46**	1,031	67·97	59	3·78	77	5·07	65	4·28	29	1·91	51	3·36	79	5·20	118	7·77	10	·66	—	—
1916	2,731	1,553	**56·86**	1,078	69·41	54	3·47	103	6·63	44	2·89	36	2·31	44	2·83	75	4·82	115	7·40	4	·25	—	—
1917	2,441	1,270	**52·03**	871	68·58	37	2·91	68	5·36	45	3·54	27	2·13	34	2·68	64	5·04	107	8·42	17	1·34	—	—
1918	2,172	1,171	**53·91**	869	74·21	67	5·72	20	1·71	21	1·79	17	1·45	49	4·19	45	3·84	70	5·98	13	1·11	—	—
Totals	13,387	7,701	**57·07**	5,508	71·52	282	3·66	322	4·18	217	2·82	149	1·94	215	2·79	392	5·09	540	7·01	60	·78	16	·21

* (Baby unable to suck, or removed to a hospital).

TABLE VI.—WEIGHTS ON

Under 1 week... Infants, 1	lbs. 5—6 1	—	—	—	—	—	—
1—2 weeks Infants, 17	lbs. 2—3 1	lbs. 5—6 2	lbs. 6—7 5	lbs. 7—8 5	lbs. 8—9 3	lbs. 9—10 1	—
2—3 weeks Infants, 62	lbs. 2—3 1	lbs. 4—5 2	lbs. 5—6 3	lbs. 6—7 17	lbs. 7—8 25	lbs. 8—9 7	lbs. 9—10 4
3—4 weeks Infants, 133	lbs. 2—3 1	lbs. 5—6 10	lbs. 6—7 29	lbs. 7—8 39	lbs. 8—9 32	lbs. 9—10 16	lbs. 10—11 1
1—2 months Infants, 525	lbs. 2—3 1	lbs. 4—5 6	lbs. 5—6 28	lbs. 6—7 56	lbs. 7—8 107	lbs. 8—9 115	lbs. 9—10 92
2—3 months Infants, 306	lbs. 4—5 1	lbs. 5—6 2	lbs. 6—7 13	lbs. 7—8 38	lbs. 8—9 41	lbs. 9—10 54	lbs. 10—11 64
3—4 months Infants, 208	lbs. 4—5 2	lbs. 5—6 4	lbs. 6—7 6	lbs. 7—8 10	lbs. 8—9 16	lbs. 9—10 34	lbs. 10—11 42
4—5 months Infants, 111	lbs. 6—7 1	lbs. 7—8 2	lbs. 8—9 9	lbs. 9—10 9	lbs. 10—11 14	lbs. 11—12 15	lbs. 12—13 15
5—6 months Infants, 66	lbs. 8—9 1	lbs. 10—11 9	lbs. 11—12 2	lbs. 12—13 15	lbs. 13—14 9	lbs. 14—15 8	lbs. 15—16 3
6—7 months Infants, 54	lbs. 10—11 4	lbs. 11—12 5	lbs. 12—13 6	lbs. 13—14 8	lbs. 14—15 8	lbs. 15—16 7	lbs. 16—17 6
7—8 months Infants, 43	lbs. 9—10 1	lbs. 10—11 5	lbs. 11—12 3	lbs. 12—13 2	lbs. 13—14 3	lbs. 14—15 6	lbs. 15—16 3
8—9 months Infants, 33	lbs. 10—11 2	lbs. 11—12 2	lbs. 13—14 4	lbs. 14—15 3	lbs. 15—16 5	lbs. 16—17 6	lbs. 17—18 4
9—10 months Infants, 31	lbs. 11—12 1	lbs. 13—14 2	lbs. 14—15 4	lbs. 15—16 3	lbs. 16—17 6	lbs. 17—18 7	lbs. 18—19 1
10—11 months Infants, 16	lbs. 14—15 3	lbs. 16—17 3	lbs. 17—18 1	lbs. 18—19 5	lbs. 19—20 3	—	—

REGISTRATION OF 1606 INFANTS.

								Unknown.	Average weight in lbs.
—	—	—	—	—	—	—	—	—	5·50
—	—	—	—	—	—	—	—	—	6·47
lbs. 10—11 1	—	—	—	—	—	—	—	2	6·73
lbs. 11—12 2	lbs. 12—13 1	—	—	—	—	—	—	2	7·19
lbs. 10—11 70	lbs. 11—12 38	lbs. 12—13 5	lbs. 13—14 6	—	—	—	—	1	8·12
lbs. 11—12 49	lbs. 12—13 23	lbs. 13—14 13	lbs. 14—15 4	lbs. 15—16 2	lbs. 16—17 2	—	—	—	10·28
lbs. 11—12 34	lbs. 12—13 28	lbs. 13—14 10	lbs. 14—15 12	lbs. 15—16 8	lbs. 16—17 1	lbs. 17—18 1	—	—	10·33
lbs. 13—14 14	lbs. 14—15 10	lbs. 15—16 8	lbs. 16—17 8	lbs. 17—18 3	—	—	—	3	11·73
lbs. 16—17 9	lbs. 17—18 3	lbs. 18—19 4	lbs. 19—20 1	lbs. 21—22 1	—	—	—	1	13·55
lbs. 17—18 5	lbs. 18—19 4	—	—	—	—	—	—	1	13·72
lbs. 16—17 4	lbs. 17—18 4	lbs. 18—19 5	lbs. 19—20 3	lbs. 20—21 1	—	—	—	3	14·22
lbs. 18—19 2	lbs. 19—20 3	lbs. 20—21 1	lbs. 21—22 1	—	—	—	—	—	15·43
lbs. 19—20 1	lbs 20—21 1	lbs. 21—22 4	—	—	—	—	—	1	16·47
—	—	—	—	—	—	—	—	1	16·93

SECTION II.

DISEASES AND DEFECTS OF THE WHOLE NUMBER OF INFANTS UNDER OBSERVATION DURING THE YEAR.

The 2,172 infants under observation during the year shared among them 14,289 diseases and defects, and these are shown in Table VIII. The percentages are given in relation to the number of infants and not to the number of diseases, since in spite of the fact that in the case of some diseases individual infants suffered from more than one attack, it seems best to include only the first attack in the return. The age and sex incidence of the various diseases and defects with other tabulated and charted material was suspended during the war, and is not given this year in view of the inclusion of other perhaps more essential matter. It is of interest, however, and, particularly the age incidence, is of much value in its addition to our knowledge of the diseases and especially the abnormal development of infancy.

Duration of Symptoms of Illness.—Of the 1,606 infants registered during the year, 895 (**55·73** per cent.) of those presenting these diseases and defects had shown symptoms of illness from birth.

Congenital Defectiveness.—A continuous observation (carefully recorded) of a large number of infants establishes clearly the fundamental fact that our infant population as encountered at varying ages throughout the first year includes two distinct groups of babies (*a*) those born normal, (*b*) those born defective. This defectiveness which is due to pathological causes operating on the infant before birth is shown clinically in a variety of forms after birth such as defect in general development or local structural malformations or definite disease such as congenital syphilis.

Of the 1,606 infants registered during the year, 990 (**61·64** per cent.) were congenitally defective according to the above definition, as follows :—

187 (**11·64** per cent.) were born in a state of malnutrition.
136 (**8·47** per cent.) were on registration under the minimum normal birth length (20 ins.).
591 (**36·80** per cent.) were on registration under the minimum normal length for age.
129 (**8·03** per cent.) had been born prematurely.
587 (**36·55** per cent.) showed clinical signs of congenital syphilis.

A full and accurate classification and return of congenital defectiveness would depend upon an exact knowledge of the causes at work in the period prior to birth and the conditions resulting from these. Our knowledge is extremely limited at present, and much research—clinical, pathological and sociological—is urgently necessary in this field. The above return based on careful clinical observation and enquiry merely classifies the cases broadly according to those manifestations which point definitely to congenital defect, *i.e.*, to the fact that these babies in one sense or another, and in more or less degree, were born defective.

It should be stated that premature children are always in my experience under the minimum normal length at birth (20 ins.), and these, though not returned in any of the first four groups above except that for prematurity are from the point of view of general development congenitally defective. Many full-time infants, however, are so also, and that these must be considered both immature and congenitally defective, though not untimely, is fully supported by our practical experience of the much higher mortality, and almost invariable defectiveness in a general sense, of such infants.

The mortality of such infants appears to be in fact higher than that of premature infants as will be seen on page 67. It is shown there that while of the premature babies registered during the year **17·05** per cent. died as compared with **8·53** per cent. full-time babies, of the full-time babies registered under the minimum normal birth length **22·06** per cent. died as against **8·03** per cent. infants of normal length.

The number of infants *early* presenting evidence of abnormal growth of bone, chronic disease or defect of the nervous system, anæmia, and chronic catarrh of the mucous membranes, together with special susceptibility to and poor resistance against common infections, are also frequently indications of congenital defectiveness. The fact that **55·73** per cent. of those babies registered who were suffering from diseases or defects were stated to have shown symptoms of illness from birth is also of much significance in this connection.

The question of congenital defectiveness is dealt with more fully on page 53 in its reference to infantile mortality upon which it has so large and important a bearing.

Bone and Joint Affections. (2,172 infants under observation during the year).

It will be seen that the number of defects of bone discovered is high, first among the groups of diseases and defects. These are due, of course, to some condition eventuating in abnormal nutrition and development of the tissues, and are common evidence, particularly in the more marked forms, of disease of congenital origin, though they by no means exclusively indicate this. No return is given for Rickets, since our experience has shown that the various manifestations or symptoms commonly ascribed to *a* disease " Rickets " are symptomatic of more than one disease of infancy resulting in such abnormal nutrition. Most of these manifestations, *e.g.*, chronic epiphyseal enlargements of ribs and wrists, abnormal head ossification, postural kyphosis, laryngismus stridulus and chronic intestinal catarrh are returned in Table VIII. (Diseases and Defects of the 2,172 infants).

Gastro-Intestinal Diseases (2,172 infants).

These give a high figure, the second highest of all the diseases classified, though a lower figure than last year. While of the number of cases representing the more serious forms of gastro-intestinal disease, the largest number occurred during the summer-autumn period, July to October, with the highest incidence of any one month in August, it will be noted that there was this year, as last year, a much lower incidence of these diseases during the warmer months. The cases, as will be seen on reference to Chart I., tended to occur more generally and evenly throughout the year, and a considerable number of these were of the nature of chronic relapsing inflammations, many of which dated from the first week of life, but it must be remembered that milk infections occurring all the year round, though with increased incidence in the warmer weather, affect particularly infants suffering from pre-existent delicacy or disease of the gastro-intestinal tract. Such infants who are frequently congenitally defective, suffer from these infections much more frequently and severely, and die from them in much larger numbers than healthy infants.

The climatic conditions of the summer-autumn period of the previous few years have been increasingly unfavourable to a high incidence of the gastro-intestinal infections and toxæmias, and this must have had much to do with the lowered infant death rate generally. I would again especially emphasise my view expressed in my last four reports that when the climatic conditions of this critical period of the year more approximate to those of 1911 and 1913, the number of deaths from this cause will under existing circumstances, viz., the existence of a number of congenitally defective babies in the community and a large number of artificially-fed infants receiving a supply of bacteriologically impure milk, be very much higher.

During the year under review, the number of deaths certified as due to gastro-intestinal disease, come *fifth* in the order of classified causes (Chart II.), whereas in the year 1914, this group occupied the *second* place.

In this connection the statement of Dr. Stevenson based upon his table showing " the increase or decrease in infant mortality (in 1917) as compared with 1911–14, and with 1916," is interesting :—

> " From the section of the table dealing with absolute increases or decreases, we may see to what a large extent the advantage of 1917 over the four latest years of peace is dependent upon the character of the summer. Of the whole decline of 13·03 per thousand births shown no less than **9·89** per cent. is due to Diarrhœa, mortality from which will almost certainly increase again in hotter summers."*

The indications for preventive measures which I have emphasised in all my previous reports are therefore clear. There is a great and urgent need for a supply of *bacteriologically pure milk* for our artificially fed infants, and for provision for its delivery twice daily and for keeping it not only uncontaminated but *cool* up to the moment of consumption.

The necessity for the institution of a thorough and comprehensive ante-natal scheme of research, supervision and treatment, which will reduce the number of infants coming into the world congenitally defective, and therefore especially susceptible to these, as to all other common infections is established by the facts and figures given not only in this but in other sections of this and of my previous reports.

The importance of a united effort to reduce the number of artificially fed infants which must involve a more thorough and scientific study of the causes of failure to breast feed, and assisting not merely advising mothers to do this, is indicated in Section I., but the issues should not be confused. We should remember that artificial feeding properly managed does not *per se* kill bottle-fed babies, but that infected milk is chiefly responsible. It should not be forgotten either that even when we have reached the irreducible minimum a certain number of infants must remain who are inevitably artificially fed for obvious reasons, such as enforced employment and death or illness of mothers, and that many weaned babies and young children in their second year are killed now by milk infection.

Respiratory Diseases (2,172 infants).

It will be seen that a considerable number of Respiratory diseases were treated during the year. Respiratory disease was also the third highest of any one of the certified causes of death of the infants dying during the year under review (Chart II.). The probable underlying causes of Respiratory diseases among the infants are several, and I think all essentially preventable.

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* Registrar-General's Annual Report (England and Wales), 1917, page xlii.

The facility with which infants chill, and with which "colds" travel downwards in infancy, is, of course, well-known. The babies suffer frequently from a "cold," so frequently that no return has been given for this in the table of diseases and defects, and the cause of these frequent colds is undoubtedly the overcrowded, overheated existence in stuffy, insufficiently ventilated rooms, and the contrast of temperature experienced on being taken out of doors on our many inclement days, or on being exposed to draughts; and chills are often, I believe, a result of the infant's exposure to the damp created by the drying of the family washing in the living room, inevitable now on many occasions. "Colds" are also common in the families, and the babies frequently catch them in this way. It is impossible to afford these urban working-class infants the opportunity of being reared in and hardened by a "fresh-air existence," which with graduated bathing is the best preventive of colds, since present housing conditions not only negative proper ventilation indoors, but render a suitable spot for airing and sleeping out of doors, even on the hottest days, extremely seldom available, and many of the mothers have not time to take the infants out even for a limited daily airing.

Exposure in the absence of sufficiently warm clothing is undoubtedly a factor frequently accounting for the transformation of a common cold into a bronchial catarrh, bronchitis, or broncho-pneumonia. The substitution of cotton or flannelette for the necessary wool and flannel in the clothing of the babies, and the damp chilly condition of the skin of many, are very probable factors. These faults have often been due to the mother's economic inability to procure the necessary garments, but not infrequently are due to ignorance or indifference.

It must also be remembered that bacterial infection, apart from chill, plays a large part in the causation of Respiratory diseases, and that the home conditions expose these infants to a much higher risk of such infection than that to which the "nursery" baby is exposed.

Finally, as in the case of infections of the gastro-intestinal tract, it has been found that delicate babies, who are so often congenitally defective babies, are particularly susceptible to these respiratory affections.

The only preventive work available to us at the Infant Clinics has been, as in previous years, very constantly and painstakingly carried out. A very large part of the time of the staff has been spent in *individual* instruction of the mothers as to the proper care of the baby, and, as before, all necessary warm clothing, cheap bedding, toilet and other infantile necessities, otherwise unobtainable by the mothers, have been provided and sold to them.

Further, the staff of the Department have, as in previous years, maintained their Distress Fund for the relief of infants in need of clothing or other necessity, not food. To this Fund they contribute regularly in money and kind, and also themselves, in their " off duty " time, make woollen and knitted garments, etc., from the materials they supply. It has thus been possible to secure at least the essentials for body warmth, to practically all necessitous infants coming under our care.

It is of first importance to treat early, and secure the best conditions for, these frequent colds and bronchial catarrhs in infancy, and to cure them rapidly in order to prevent the further development of more serious respiratory trouble, and much valuable preventive work has, I am confident, been done at the Clinics in this direction during this as previous years. I am equally confident that still more might have been done had we had more hospital accommodation available for the immediate admission of cases of acute respiratory trouble, particularly those occurring in delicate babies.

Anæmias.—It will be seen that 1,109 (**51·06** per cent.) of the babies under observation during the year suffered from Anæmia. This condition which is often noticeable at quite early ages is, of course, in some cases, due to disease. There is no doubt, however, that insufficiency of fresh air is a very large factor, and the improvement in this respect which has been noticed after even brief periods in the Infants' Hospital—where the infants spend a large part of their time, in all possible weather, in the open-air ward, has often been striking.

Diseases of the Nose.—It will be seen that 1,029 (**47·38** per cent.) of the infants under observation during the year suffered from chronic obstructive catarrh of the nose ; and the figure for the previous year was 1,055 (**43·22** per cent.). I wish to call particular attention to the frequency of occurrence of this condition among these infants, and the importance of its recognition and early and continued treatment. Owing to the peculiar anatomical conditions existing in infancy, abnormal conditions of the nose and neighbouring parts are particularly harmful. The relative smallness of the nostrils renders the effects of obstruction more serious, interfering in severer cases with the power of suction and in all cases with proper nasal respiration and the due entry of air to the lungs and proper development of the as yet plastic chest. Further, the passage of infected material from the region behind the nose into the ear is facilitated in infancy, and the much too frequent cases among the infants of middle-ear disease—discharging ears—are almost invariably secondary to catarrh of the nose, and therefore dependent upon it.

As to the causes of this condition, a considerable number of the cases occur as a result of the specific inflammation and resulting liability to secondary infections of congenital syphilitic disease, and these cases are often very intractable, and after apparent cure recur and persist after each slight cold taken by the child. With regard to other causes, adenoids as a cause have been carefully sought for, but are of extreme rarity in infancy particularly before the existence of the chronic nasal catarrh. Our experience clearly shows that these chronic catarrhal conditions of the nose which are so often neglected, are in a large number of cases, the precursors of Adenoids in later infancy and childhood, and there remains no doubt in my mind that very many cases of operation for the removal of adenoids in the pre-school or school age would be prevented by due attention to this condition during the first year of life. This would be preventive treatment, preventive of Adenoids, as in its turn the operative treatment of Adenoids is preventive of worse evils ; but still earlier preventive measures, attacking the causes of chronic obstructive nasal catarrh, would prevent the occurrence of the nasal condition itself. Apart from specific disease, many cases of obstructive nasal catarrh would seem to be explained by the constant colds these infants suffer from due to the factors discussed in the previous section on respiratory diseases, many of which have been shown to be due to defective environmental conditions. The especial delicacy of the mucous membranes lining the nasal and lower respiratory tracts in infancy, and their susceptibility to dust and dirt infections, the liability to which is so greatly increased in working-class homes under present housing and social conditions, must also be remembered.

Furthermore, the proper cleansing of the nostrils and clearing of this most important air-way, does not occur to the average working-class mother as a necessary part of the infant's toilet. A great deal of time is spent at the Clinics on the practical instruction of mothers in regard to this and other details of infant hygiene, and also the treatment of this defect.

Ear Affections.—It will be seen that 175 (8·06 per cent.) of the infants suffered from discharging ears. It has been stated by at least one experienced observer that " the great handicap of adult catarrhal deafness is due in the majority of cases to causes which have been in operation since infancy and childhood." The assumption that many of the cases start in the first year is borne out by our experience and by enquiry of the mothers as to the age at which other children who had suffered from discharging ears were first affected. I would again emphasise the fact that the majority of these cases are initiated by unhealthy conditions of the nose.

It is of the highest importance to commence treatment of the cases early and to cure them quickly with a view to preventing later defect of hearing.

Where efficient treatment can be secured, these cases in infancy show a marked tendency to cure. Many of the cases under our care have cleared up apparently completely, and only one serious complication has occurred among them to our knowledge during the year. Practical instruction is given to the mothers as to the home treatment of these cases, and safe and sterilisable syringes are lent to them, and a fairly large number of mothers have done their best to carry out instructions and with marked success. A more rapid cure, however, is to be desired and sought for in all cases than has been effected in a few. Where this is due to the indifference or incapability of the mother or to a need for more skilled treatment than she can undertake, the provision of a larger number of hospital cots into which cases could be admitted, or in the case of breast-fed babies especially—for sending nurses from the Infant Clinic staffs to effect the treatment in the homes, would be very desirable.

Abnormal Conditions Arising in the New-born Period.—It will be seen that abnormal conditions of the navel were found in 350 (**16·11** per cent.) of the infants. Of these **5·24** per cent. of the cases were due to absence of the normal healing of the navel and so originated in the new-born period. In these cases instead of the complete healing and sound formation of scar tissue over the site of the detached cord within the normal time, there is patency with more or less soreness and redness of the navel, discharge and often unhealthy granulations. There is a danger of sepsis in these cases through the entry of germs and a risk which we very frequently see materialise a few weeks later, of a protrusion or rupture at the navel. While the condition is often found in congenitally defective babies prevention of many cases could be secured by proper care of the navel, with a view to keeping the part not only clean but *dry*, thus encouraging it to scar firmly as soon as possible.

Untrained midwives, and "helps" employed as the "maternity nurses of the poor" require much teaching and supervision in regard to this and other matters in the care of the new-born baby, and it is highly desirable that the importance of obtaining treatment for the condition in the earliest stage, should be impressed upon trained midwives.

The practice of forcibly squeezing the secretion from the breasts in the case of mastitis of the newly-born (referred to on page 28) and thus further irritating them is common here, being both instituted by those in attendance on the mother and baby and recommended to the mother by those who should know better. The proper management of these cases and knowledge of the ill-effects which in the case of girls will probably unfavourably prejudice suckling later should be impressed upon midwives, and, in fact, more definite and extended training in the normal development and requirements of the new-born infant, including the skilled management of lactation, is, I feel, very necessary in the training of all midwives.

In the provision for the care of infancy the midwife plays a first and very important part, and in view of the fact that the infant in the majority of cases at the time of birth and in the subsequent two or three weeks does not undergo a skilled medical examination, her responsibility is considerable. She should be trained so thoroughly in the knowledge of the *normal* conditions and development of the infant during this period, in the careful observation of the baby under her care, and in the significance of what may seem to be slight departures from the normal, that she readily and early secures medical advice and treatment where these exist.

TABLE VIII.—Diseases and Defects of the 2,172 Infants Under Observation During the Year.

Affection or System.	No. of Cases	Actual Disease.	No. of Infants.	Per cent.
Bones, Joints and Muscles	2,019	Abnormal Head Ossification	993	45·71
		Chronic Epiphysitis (ribs)	442	20·35
		,, ,, (wrists)	47	2·16
		Acute ,, ,,	14	·64
		Delayed Muscular Development	280	12·89
		Abnormal Chest Formation	221	10·17
		Curved Tibiae	16	·74
		Dactylitis	3	·14
		Fracture of Arm	1	·05
		Scoliosis	1	·05
		Periostitis	1	·05
Ear	231	Discharging Ears	175	8·06
		Earache	55	2·53
		Mastoid Disease	1	·05
Eye	291	Conjunctivitis	195	8·98
		Ophthalmia neonatorum	69	3·18
		Blepharitis	20	·92
		Stye	4	·18
		Corneal Opacity	2	·09
		Congenital Cataract	1	·05
Gastro-intestinal	1828	Constipation	575	26·47
		Gastro-intestinal Inflammations, Infections, and Toxæmias (1 Influenzal)	343	15·79
		Dyspepsias	343	15·79
		Chronic Vomiting (not of gastro-intestinal origin)	258	11·88
		Diarrhœa (simple or symptomatic)	254	11·69
		Gastric and Intestinal Hæmorrhage (11 Gastric)	25	1·15
		Anal Fissure	14	·64
		Prolapsus Ani	8	·37
		Intestinal Parasites	4	·18
		Hæmorrhoids	3	·14
		Pyloric Stenosis	1	·05
Genito-urinary	376	Phimosis	319	14·69
		Balanitis	16	·74
		Nephritis	10	·46
		Hydrocele	9	·42
		Albuminuria	8	·37
		Orchitis	6	·28
		Vaginitis	3	·14
		Hæmaturia	2	·09
		Vaginal Hæmorrhage	1	·05
		Pyelitis	1	·05
		Urethritis	1	·05
Carried forward	4,745			

Affection or System.	No. of Cases.	Actual Disease.	No. of Infants.	Per cent.
Brought forward	4,745			
Glandular	365	Adenitis, Chronic (mostly multiple)	296	13·63
		Adenitis, Acute	39	1·79
		Mastitis neonatorum	25	1·15
		Adenoids	5	·23
Heart and Circulatory	1177	Anæmias	1109	51·06
		Heart Disease (Congenital)	33	1·52
		Heart Affections (acquired)	20	·92
		Enlarged Spleen	7	·32
		Purpura	4	·18
		Acute Endocarditis (Influenzal)	3	·14
		Hæmophylia	1	·05
Infectious Fevers	198	Whooping Cough	105	4·84
		*Influenza	41	1·89
		Measles	39	1·79
		Chickenpox	10	·46
		Diphtheria	1	·05
		Mumps	1	·05
		Septicæmia	1	·05
Liver	154	Cirrhosis of Liver	94	4·33
		Jaundice of the newly born	39	1·79
		Acidosis	20	·92
		Catarrhal Jaundice	1	·05
Malformations (Congenital), etc.	161	Nævi	38	1·75
		Palate abnormally shaped	38	1·75
		Undescended Testicles	27	1·24
		Of External Ear	9	·42
		Sternomastoid hæmatoma	7	·32
		Of External Genitals (boy)	6	·28
		,, ,, (girl)	3	·14
		Talipes equinus	5	·23
		Hypospadias	3	·14
		Coccygeal Sinus	3	·14
		Webbed Toes	3	·14
		Of Eye Lids	3	·14
		Meningocele	2	·09
		Tongue Tie	2	·09
		Supernumerary Digits	2	·09
		Cleft Palate	2	·09
		Torticollis	2	·09
Carried forward	6,800			

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* Of the cases there were 29 Respiratory, 6 General Infection, 2 Acute Endocarditis, 2 Acute Meningitis, 1 Gastro-Intestinal, 1 Pyelo-Nephritis and Endocarditis.

Affection or System.	No. of Cases.	Actual Disease	No. of Infants	Per cent.
Brought forward ..	6,800			
Malformations, etc., (cont.) ..		Hare Lip	1	·05
		Of Thumb	1	·05
		Cephalhæmatoma	1	·05
		Of Uvula	1	·05
		Cyst	1	·05
		Congenital dislocation of lumbar vertebrae ..	1	·05
Mouth	578	Ulcers, patches and fissures	282	12·98
		Thrush	201	9·25
		*Generalised inflammatory congestion of mucous membrane	44	2·02
		Glossitis	34	1·56
		Stomatitis	17	·78
Nervous	1152	‡Chronic Neurosis	761	35·04
		Convulsions	126	5·80
		Paralysis (Cranial Nerves) ..	60	2·76
		Laryngismus Stridulus ..	52	2·39
		Congenital Laryngeal Stridor	4	·18
		Mental deficiency	40	1·84
		Meningitis (chronic) ..	39	1·79
		Meningitis (acute) influenzal	2	·32
		Meningismus	19	·88
		Paralysis (limbs) (ante and post natal origin) ..	10	·46
		Masturbation	10	·46
		Mongolism	9	·42
		Habit spasms	8	·37
		Hydrocephalus	7	·32
		Tremors	2	·09
		Cerebral Hæmorrhage ..	2	·09
		Tetany	1	·05
Nose	1037	Chronic obstructive catarrh	1029	47·38
		Epistaxis	8	·37
Respiratory	1125	Bronchial catarrh	593	27·30
		Bronchitis	394	18·14
		Laryngitis, chronic ..	67	3·09
		Laryngitis, acute	9	·42
		Pneumonia	55	2·53
		Atelectasis	2	·09
		Pleurisy	2	·09
		Cirrhosis of Lung	2	·09
		Emphysema	1	·05
Carried forward ..	10,691			

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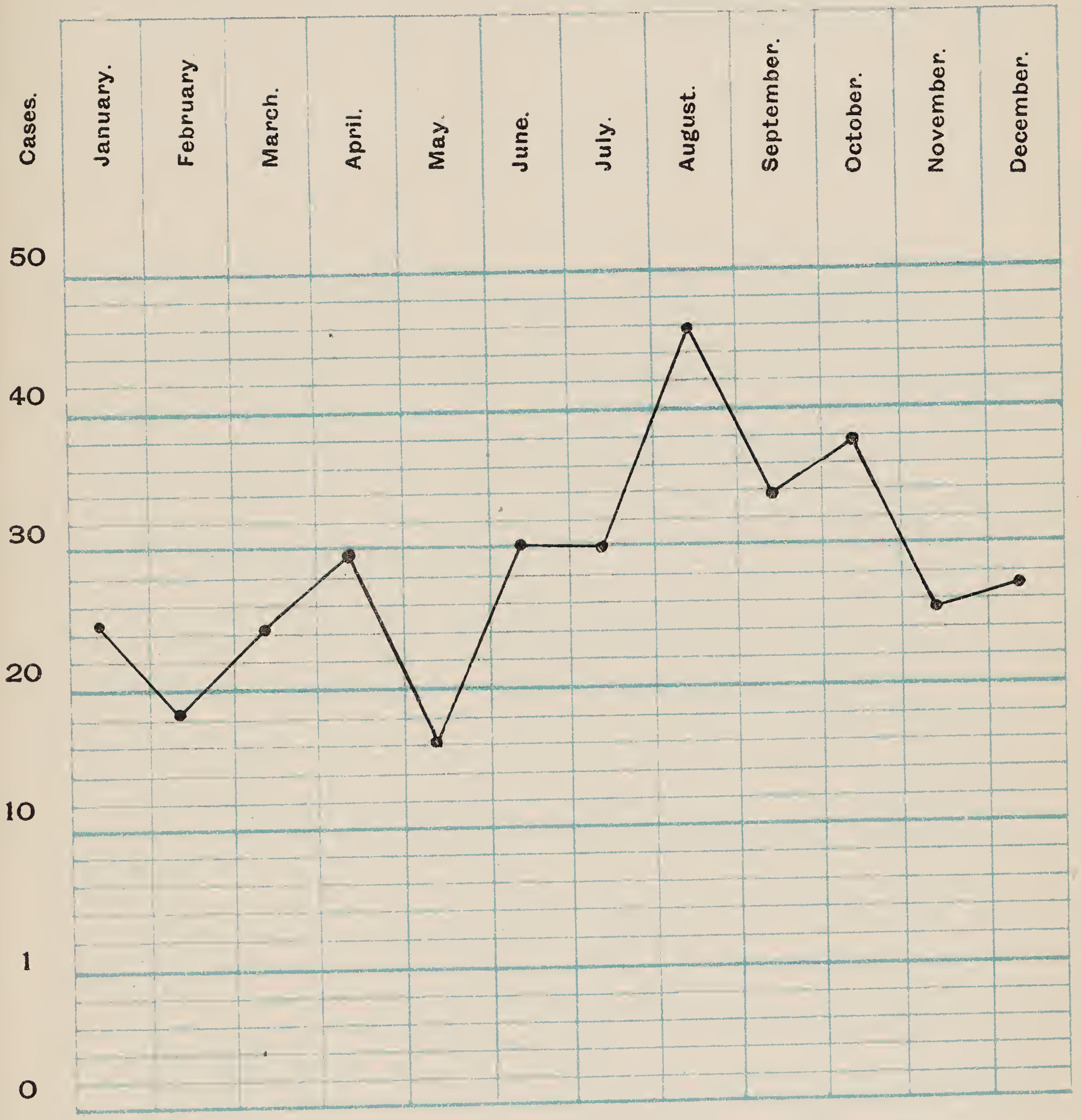
* Commonly seen in young infants suffering from congenital syphilis.

‡ Extreme continued degree of nervous tension, crying, restlessness and sleeplessness.

Affection or System.	No. of Cases	Actual Disease.	No. of Infants	Per cent.
Brought forward ..	10,691			
Ruptures	281	Umbilical	221	10·17
		Inguinal	57	2·62
		Ventral	3	·14
Skin and Subcutaneous Tissues	1612	Chronic Eruptions and Lesions (various) ..	1173	54·00
		Transient Eruptions and Lesions	335	15·42
		Scabies	56	2·58
		Onychia	10	·46
		Burns and Scalds	9	·42
		Cellulitis	8	·37
		Condylomata	6	·28
		Trophic Ulcers	3	·14
		Whitlow	3	·14
		Erythrodema	2	·09
		Pemphigus, Acute	2	·09
		Pediculosis	2	·09
		Ringworm	1	·05
		Drug Rashes (bromide) ..	1	·05
		Pyæmia	1	·05
Syphilis (Congenital), Clinical signs of ..	763	Syphilis (Congenital) ..	763	35·13
Teething	475	Illness due to teething ..	235	10·82
		Delayed teething	234	10·77
		Precocious teething ..	5	·23
		Carious teeth	1	·05
Throat..	335	Pharyngitis and Pharyngeal Catarrh	122	5·62
		Faucitis	108	4·97
		Tonsillitis	51	2·35
		Throat Ulcers and Patches	32	1·47
		Enlarged Tonsils	14	·64
		Hypertrophied Uvula ..	8	·37
Umbilicus	129	Catarrhal Omphalitis ..	62	2·85
		Septic Omphalitis	20	·92
		Granuloma	32	1·47
		Umbilical Hæmorrhage ..	15	·69
Tuberculosis	2	Pulmonary	2	·09
Injuries	1	Of Eye	1	·05
TOTAL ..	14,289			

Chart I.

Seasonal Incidence of 343 Cases of the more serious forms of Gastro-intestinal Disease among the 2,172 Infants attending during the year.



SECTION III.

AN ANALYSIS OF THE INFANT MORTALITY OF THE YEAR.

Of the 2,172 infants who attended during 1918, 148 (**6·81** per cent.) died during the year. As in previous years, a detailed analysis has been undertaken of all the factors, clinical, social and environmental, known at the Clinics in regard to these infants.

I would specially emphasise the fact that in this as in each previous report, *every* infant registered at the Clinics who attended the Clinics during the year and died during the year, is included in the figure 148. As will be seen on page 55 many of the infants attended the Clinic only once and 80 (**54·06** per cent.) paid only 1—6 visits ; while many died weeks or even months after defaulting, outside the care of the Clinic. All these infants have been included in a mortality return, which is obviously in no sense an Institutional Mortality of the Infant Clinics, because in my judgment there is urgent need to systematically investigate all the available factors concerning every infant who died. The public provision of an Institution, established primarily for the prevention of infant mortality, and affording opportunity for continued and systematised observation of infants both healthy and ill, could not be justified unless research contributing to the discovery of exact knowledge of the conditions affecting infancy in the area was an essential inclusion in its organisation and work, since upon such knowledge and upon it alone depends the successful application of preventive measures.

The main factor in infant mortality has been related, according to the critic, either to poverty, maternal ignorance, lack of breast feeding, insanitation or other well-known defects in the postnatal environment of the urban baby. Our observation of a considerable number of infants in this industrial town during the past 6½ years has clearly established some general and perhaps basic facts as to causation which are of more than local importance and interest at the present time, and they can be simply stated.

Our infant mortality problem includes two essential factors (A) (primary in time and importance) *Defective Babies*—defectiveness due to pathological causes operating upon the infant before birth and shown clinically in a variety of forms after birth ; (B) (secondary in time and importance) *Defective Environment*—varied and well-known defects operating directly and indirectly upon the infant after birth, such as insanitary housing conditions, impure milk, bad "mothering," etc.

There is a close relationship between (A) and (B). The relative immaturity of infancy and its active developmental processes render it peculiarly susceptible to injury by adverse environmental influences. Principal among these are ordinary bacterial infections, sources of which abound in the environment of urban working-class babies, owing to the above-mentioned defects. They largely suffer and die from these infections, but the babies who *die* are in the majority of cases those whose tissues afford a suitable soil and offer an imperfect resistance, and these are babies who, for one reason or another, are *defective babies.*

Various returns given in the subsequent pages of this section, give statistical support to these statements, and establish directly and indirectly the primary importance of congenital defect in infant mortality, and in the study of these, three outstanding factors should be noted as follows :—

(*a*) The *clinical* signs of congenital defect presented by the great majority of the infants, and the existence of symptoms of illness from birth in a very large number.

(*b*) The early age at which, relative to later months, the greater number of the infants died, thus demonstrating their peculiar inability to enter upon the average baby's struggle for existence.

(*c*) The unsatisfactory health histories and also reproductive histories of the parents, showing that the " stock " from which many of these infants came was clearly unfavourable to the production of healthy and viable offspring.

These fundamental facts may be stated, but they lead us to the conclusion that the problem of the causation of infantile mortality is complex and not simple. We are without exact and complete knowledge of the operation of the various contributory factors, medical and sociological, and the exact value which should be placed on each in individual cases and in individual areas. Yet this knowledge must both precede successful preventive effort and justify increasing national expenditure upon it. It will not be available until we possess reliable and scientific *data* representing continued observations of expectant mothers, infants, pre-school and school children, observations which extend in all cases unbrokenly over periods of actual or apparent health and of obvious disease. Such observations if they are to afford reliable data must be directed by those skilled in each of the two separate and specialised departments of clinical medicine—Obstetrics and Pediatrics, and of their sub-departments of Pathology and Bacteriology. They must also be co-related with the fullest possible information of the family history and environmental conditions of each individual mother and child, and this necessarily implies organisation, the closest co-operation between the work of the several departments, each of which is only a link in the chain of child welfare, and the utilisation of all available co-ordinating machinery. In this research if it is to be productive, what we have called purely medical factors, those concerned with the clinician and the laboratory, will be inextricably interwoven with sociological and environmental factors. It must obviously be national in the scope of its enquiry and find its place in those comprehensive Maternal and Child Health Services which will surely be the first and in the long-run perhaps the most beneficent creation of our Ministry of Health.

Attendances at the Clinics of the 148 Infants.—A comparison is given in the ensuing table of the number of attendances made by the 148 infants with those made by the 427 infants who attained one year of age in our care during the year. From this it will be seen that allowing for the fact that many of the 148 infants died so young and all before the completion of their first year, the supervision had been markedly less in their case. It will be noted that 54·06 per cent. paid only 1—6 visits to the Clinic. The passage out of our hands of many infants gravely ill is, I think, to be ascribed largely to the fact that we have totally inadequate hospital provision.

148 Infants dying			427 Infants becoming one year old in our care		
No. of Visits	Infants	Per cent.	No. of Visits	Infants	Per cent.
1	15	10·14	—	—	—
2—3	30	20·27	2—3	5	1·17
4—6	35	23·65	4—6	19	4·45
7—12	39	26·35	7—12	65	15·22
13—24	21	14·19	13—24	233	54·57
25—40	8	5·40	25—40	98	22·95
Over 40	—	—	Over 40	7	1·64

Housing Conditions.—Of the 148 infants dying, 118 (79·93 per cent.) lived in back-to-back houses.

An attempt has been made to ascertain and state fairly and accurately the degree of overcrowding obtaining in the homes, and the statistical facts and deductions are given below :—

Of the 148 families :—

34 (**22·96** per cent.) lived in 2-roomed houses.
64 (**43·25** per cent.) lived in 3-roomed houses.
19 (**12·84** per cent.) lived in 4-roomed houses.
13 (**8·78** per cent.) lived in 5-roomed houses.
10 (**6·76** per cent.) lived in houses of more than 5 rooms.
8 (**5·41** per cent.) were unknown.

In the absence of information as to the size of the families, even if the size of the rooms were known, the above statement conveys little or nothing as to the factor of overcrowding, hence the number of persons occupying the houses in each case are tabulated below :—

In 102 (**68·92** per cent.) of the families there were not more than 2 persons to a room.
In 34 (**22·97** per cent.) of the families there were not more than 3 persons to a room.
In 4 (**2·70** per cent.) of the families there were not more than 4 persons to a room.

Therefore, on the assumption that not more than 2 persons to a room does not constitute overcrowding, it might be said that of the 148 families, 102 (**68·92** per cent.) were not living under conditions of overcrowding, while 38 (**25·67** per cent.) were. Certain factors which in general obtain, apart from the fact that the rooms are universally small, serve however to modify such deductions. It will be generally conceded that a living room should not be regarded as a bedroom. Nevertheless, in the average family of any size it is usually inevitably so used, often by means of the "cupboard bed," and owing to shortage of bedroom accommodation we find children of 6 and 7 years old occupying the same room as the parents, adolescent girls and boys sharing rooms, while beds are not infrequently used continuously during the whole of the 24 hours for day and night workers.

The functions of these living rooms should also be noted, to many I think they are not known. The living room is in very many cases, in addition to being a bedroom, the sitting-room, the dining-room, the "reception" room, the washing, drying and ironing room, the sewing-room, the kitchen, and the nursery. It is further the sick-room, the confinement and lying-in room (the mother's bed if not already here being usually brought down for this) and the death-chamber, bodies being laid out and lying here until burial, all the other functions of the living-room inevitably continuing meanwhile. It is also the "bathroom,"—the cleanly mother must wait until the family have gone to bed to get out her " peggy-tub " and perform her ablutions here.

In many of the back-to-back cottages in which **79·73** per cent. of these families lived, larder and scullery are represented by the " cellar-head," viz., the small space in which the mother can just stand, outside the living-room, at the top of the stair leading down to the coal-cellar, and under the bedroom staircase, in which a sink is fitted with a shelf or shelves above it. It is ill-ventilated, dark, and admits no day-light, and this sink-shelf represents the " larder " in which the baby's milk must be kept. When this fact is remembered and that infants' milk must be kept at least below a temperature of 45°F. if the growth of bacteria is to be inhibited, the futility of advising the mother to keep the baby's milk " in a cool and airy place " is obvious.

Sanitary Arrangements.—While water-closets, sometimes " tipplers " providing only an intermittent flush dependent upon the release of sink-water, existed in many of the homes, the offensive and unwholesome privy-midden and wet ashpit were still retained in 30 (**20·27** per cent.) of the cases. The so-called dry ashpits remaining when the privy midden is disused obtained in the homes of 112 (**75·68** per cent.) of the cases, and the substitution for these of much smaller and portable receptacles for household refuse—sanitary dustbins—frequently emptied, is one of the measures very necessary for the prevention of summer milk infections.

Occupations of Parents.—It will be seen from Table IX. that the majority of the mothers (**68·25** per cent.) had been, as in previous years, engaged in the wool textile trades of spinning, weaving, twisting, comb-minding, etc. The highest figure for occupations of the fathers (**36·51** per cent.) this year is " Soldier in present army," the second highest figure being given for labourers (**18·24** per cent.) whereas in 1914 the highest figure (**42·35** per cent.) was for labourers of various kinds.

" Mothering."—With regard to the " mothering " of the infants in 35 (**23·65** per cent.) cases this was good ; in 22 (**14·87** per cent.) it was fairly good ; in 91 (**61·48** per cent.) it was not good.

Of the 997 infants registered during the year who had good or fairly good " mothering," 57 (**·87** per cent.) died during the year, whereas of the 609 infants registered whose " mothering " was not good 91 (**14·94** per cent.) died. It would be, however, fallacious to deduce from this increase of **14** per cent. that bad " mothering " was the only factor responsible for these 91 out of the 148 deaths. Experience has amply proved to us that in a majority of cases the bad mothers, the mentally defective mothers, the mothers who are bad attenders at the Clinics, the most ailing infants, the congenitally defective infants, and the congenitally syphilitic infants are found in close association, and all form part of one and the same problem, viz., the problem of the slum.

Children Put Out to "Nurse."—Of the 148 infants, 22 (**14·86** per cent.) were "Nurse" children when registered at the Clinic. This figure understates the number of infants who were "nurse" children at the time of death since many infants had defaulted from and been lost sight of by the Clinic when this took place, and a frequent reason for defaulting from the Clinic is the return of the mother to work at the mill. Even so, the ensuing comparison of the deaths of children who were known to be "nurse" children with those of children who were not put out to "nurse" shows the number of the former to have been more than twice as high. Of the 1,481 infants who were not "nurse" children registered during the year, 126 (**8·51** per cent.) died, while of the 125 infants registered who were "nurse" children 22 (**17·60** per cent.) died. The urgent necessity for provision for the proper care of these children has been fully discussed in Section I.

Illegitimate Children.—Of the 148 infants, 41 (**27·70** per cent.) were illegitimate.

Of the 1,441 legitimate infants registered during the year, 107 (**7·43** per cent.) died, while of the 165 illegitimate infants registered, 41 (**24·85** per cent.) died. The illegitimate death rate is therefore seen to be more than three times as high as the legitimate. The results of a special analysis of the social and clinical factors concerning these 41 illegitimate infants are given below. They indicate, I think, although the number dealt with is small, the problems involved in and underlying the high mortality of illegitimate babies, and emphasise the urgent necessity for grappling with these and instituting a national provision to save these infants.

Mothers' Homes.		Mothers' Occupations.	
With relatives	17 mothers	Textile Trades	25
Lived with father of child	10 ,,	Bottle-washing Factory	1
Lived in furnished lodgings	8 ,,	Domestic Service	5
Lived in own home	3 ,,	Carriage Cleaners	2
Lived with employers	2 ,,	Munition Workers	2
Dead	1 ,,	Laundress	2
		Dressmaker and Shop-assistant	2
		Tramway Employee	1
		Companion	1

MOTHERS' INCOMES.*	
Nil	3
Under 10/–	1
10/——20/–	8
20/——25/–	6
30/——35/– (mother had a family of 6 children)	1
Living with and supported by father of infant	10
Exact figure unknown	12

* In 2 cases only were Affiliation Orders in existence, of 3/– and 5/– respectively.

" MOTHERING " OF INFANTS.	
Good	6
Fair	9
Bad	26
INFANTS PUT OUT TO " NURSE " ON ACCOUNT OF :—	(27)
Mother working	26
Mother dead	1

Of the 41 *mothers* :—

36 worked during their pregnancy as follows :—

Under 3 months	3
3—5 months	11
5—7 months	17
Whole of 8—9 months	5

22 were definitely unhealthy, and 13 were mentally defective or abnormal.

14 were married women, of whom 9 were " separated " from their husbands and 2 were widows. (Of the 41 fathers 12 were married).

9 had had 19 previous pregnancies (illegitimate) among them, and of these 19 pregnancies 10 of the children had died antenatally or in infancy. In the case of 12 of the 19 pregnancies the father was not the same father as of the present child.

Of the 41 *Infants* :—

33 had shown symptoms of illness from birth.

39 were congenitally defective as follows :—

10 were born in a state of malnutrition.

12 were on registration under the minimum normal birth length (20 ins.).

8 were on registration under the minimum normal length for age.

6 had been born prematurely.

37 were suffering from congenital syphilis.

In this connection it is interesting to note that Dr. Stevenson in the Registrar-General's Report for 1917, commenting on the rise in the infantile death rate from syphilis states that it has " mainly affected illegitimate infants " and that " it seems probable therefore that the war has caused an increased number of deaths of infants, particularly illegitimate infants, from syphilis, though it has had so little effect in increasing illegitimacy." *

Of the 507 legitimate infants registered during the year presenting symptoms of congenital syphilis, 83 (**16·37** per cent.) died, while of the 80 illegitimate infants registered and so affected, 37 (**46·25** per cent.) died. Of the 83 legitimate infants 18 (**21·69** per cent.) were certified as dying of this disease while of the 37 illegitimate infants 20 (**54·40** per cent.) were so certified.

While illegitimate infants suffering from this disease are undoubtedly more readily certified as dying from it than are legitimate infants, there is no question of a much higher incidence of and mortality from the disease in their case, the latter being much contributed to by economic lack and bad " mothering."

Health of the Parents.—Of the 148 families, 115 (**77·70** per cent.) of the mothers were unhealthy and 28 (**18·93** per cent.) were mentally defective or abnormal. Of the fathers, 63 (**42·57** per cent.) were known to be unhealthy, while of 40 (**27·03** per cent.) the health was unknown.

Four of the infants were fatherless and one of the infants was motherless at the time of registration, while one infant became motherless and one infant fatherless after registration.

Of the 792 infants registered during the year whose mothers were healthy, 33 (**4·17** per cent.) died, while of the 814 infants registered whose mothers were unhealthy, 115 (**14·13** per cent.) died. Of the 1,478 infants registered during the year whose mothers were mentally normal, 120 (**8·12** per cent.) died, while of 128 infants registered whose mothers were mentally defective or abnormal 28 (**21·88** per cent.) died.

The relationship which is obvious in the above statistics of serious or chronic ill-health in one or other or both parents, and disease or mortality in the infants is so constantly observed at the Clinics as to suggest a close association between the two factors in the direction of cause and effect.

I am convinced as a result of my experience in this field that investigation and care of the *health of the parents* must be one of the first considerations in our schemes for infant welfare and the prevention of infant mortality.

It has been well said that " Infant Mortality from being a purely individual problem is developing into a social problem. Whatever deleteriously affects the home and the family deleteriously affects the child, and our chief problem becomes that of rectifying these conditions and discovering the means of their removal." *

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* Pages LIX. and LXI.

Reproductive Histories of the Parents.—An analysis of the previous reproductive histories of the 148 families (see ensuing table) shows that 73 of the mothers had already lost 149 lives antenatally or postnatally among them.

Mothers with no previous pregnancies	42 (**28·38** per cent.)
Mothers with previous pregnancies who had lost no children antenatally or postnatally ..	33 (**22·30** per cent.)
Mothers with previous pregnancies who had lost children antenatally or postnatally ..	73 (**49·32** per cent.)

Of these 73 :—

23 (**31·51** per cent.) had lost 33 children over one year among them.
52 (**71·23** per cent.) had lost 78 infants under one year among them.
16 (**21·95** per cent.) had had 24 miscarriages among them.
11 (**15·07** per cent.) had had 14 stillbirths among them.

Therefore, with the 73 infant deaths occurring among these families during the year, the 73 mothers had lost among them a total of 222 lives prematurely, which represents an average of **3·04** *lives per family.*

Of the 457 infants registered during the year whose mothers had had previous children, of whom all were living, 33 (**7·20** per cent.) died during the year, while of the 627 infants registered whose mothers had lost previous children antenatally or postnatally 73 (**11·64** per cent.) died.

Mothers Industrially Employed During Pregnancy.—Of the mothers of the 148 infants, 61 (**41·22** per cent.) worked for varying periods of their pregnancies. The following table shows the period and length of time worked during the pregnancies. Of the 61 mothers who worked, as will be seen 42 (**68·85** per cent) worked for periods longer than 5 months and 39 (**63·93** per cent.) worked in the mill.

Period of Pregnancy During which 61 Mothers Worked.

Under 3 months	3—5 months	5—7 months	Whole of 8—9 mos.
5	14	27	15
8·20	22·95	44·26	24·59

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* Dr. Wilbur C. Phillips—" The Trend of Medical-social Effort in Child Welfare Work."

My experience has never enabled me to establish any definite relationship between infant mortality and the industrial employment of mothers during pregnancy. Nevertheless where the mothers' work involves over-fatigue or strain or unhygienic conditions, these factors must tend to affect the infant adversely.

Confinements.—Of the 148 confinements, 101 (**68·24** per cent.) were attended by midwives only, though in 4 cases a doctor was called in on account of the infant's condition ; and 47 (**31·76** per cent.) were attended by doctors, 40 being cases of instrumental delivery and 7 of adherent placenta. Birth injury to which no death among the 148 infants could be ascribed, as a cause of later infantile mortality would from this return, as from that of previous years and as from our clinical observations, seem to be a very small factor.

Year of Registration.—Of the 148 infants, 119 were registered in the year under review and 29 had been registered in the previous year.

Sex.—Of the infants, 93 (**62·84** per cent.) were Boys and 55 (**37·16** per cent.) were Girls. From the following table showing the mortality of the Boys and Girls registered during the last five years, the increased mortality in the case of the boys will be apparent :—

Year	Girls registered	Boys registered	Girls dying	Boys dying
1914	1217	1271	71	99
1915	949	1038	87	120
1916	952	1046	76	115
1917	825	896	78	101
1918	755	851	55	93
TOTALS ..	4698	5102	367	528

One of the very real advantages accruing from the prevention of infantile mortality has been well said to be the removal of the present disproportion between the sexes which would be secured by the preservation of those infant boy lives which are now year by year lost in excess of girl lives.

Twin Births.—Of the 148 infants 13 (8·78 per cent.) were twin children.

Of the 1,558 single-birth infants registered during the year 135 (8·67 per cent.) died, while of the 48 twin births registered 13 (27·08 per cent.) died. This comparison well illustrates the diminished expectancy of life in the case of twin children, but also shows that 72·92 per cent. of the twins survived. The greater liability to death in the case of twin births undoubtedly exists, but as in the case of premature births (page 68) our observations and figures show that it is rather some factor existing in association with the twin birth than the fact of multiple pregnancy which determines the mortality in these cases. Although twin children are in the great majority of cases congenitally defective from the point of view of general development, more especially under the minimum normal length at birth, if healthy their progress is usually satisfactory, if unhealthy the prognosis is exceedingly bad. The following comparison of the clinical condition of the 35 twin infants registered and surviving with the 13 twin infants who died during the year, though only a small number is dealt with, serves to support this view :—

	35 twin infants surviving	13 twin infants dying
Total No. of infants congenitally defective	32	13
	Per cent.	Per cent.
Born in a state of malnutrition	28·57	53·85
On registration were under the minimum normal birth length (20 ins.)	37·14	69·23
On registration were under the minimum normal length for age	20·00	—
Suffering from congenital syphilis..	40·00	100·00

Ages at Death of the 148 Infants.—The ages at death are shown graphically in Chart III., and it will be noted that as last year in the age period represented by the first three months the largest number of deaths occurred, the curve descending thereafter. Comparatively few infants are registered during the first month when of course the mortality rate is still higher, but the early age at which many of these deaths occurred points unquestionably to congenital defectiveness, a defectiveness which produces its most marked effect at the tenderest ages, but which it cannot be too emphatically stated has its effect on the mortality tables at each month of the first year.

Months of the Year at which the Deaths Occurred of the 148 Infants.—It will be noted (Chart IV.) that this year the larger number of deaths occurred in May and November and not as used to be commonly the case during the Summer-Autumn period. The lessened incidence during the latter period is explained as it was last year by the climatic conditions ruling during the year. The rise in the death rate in May appears to be due to the incidence of infectious fevers, 33 per cent. of the deaths being due to these, chiefly Measles and Whooping Cough. The rise in November was undoubtedly due to the Influenza epidemic, about one-third of the deaths being due to this disease.

Mode of Feeding of the 148 infants when last seen.—Of these, 12 (**8·11** per cent.) were entirely breast-fed; 20 (**13·51** per cent.) were before the age of 8—9 months receiving artificial feeding in addition to breast; 105 (**70·95** per cent.) were entirely artificially fed; and 11 (**7·43** per cent.) of the infants (who had been previously artificially fed) at their last attendance at the Clinic were receiving the feeding normal from the 8th—9th month of life. Most infants, including those weaned or being weaned after the normal period of breast feeding, from this age naturally begin taking milk and milky foods and cannot then be considered "artificially fed," although for them impure milk constitutes almost as great a danger from the point of view of milk infection in the warmer weather as it does in the case of the younger infants. These older infants if healthy are better able in a sense to withstand such infection, but in my experience it frequently proves to be a serious factor during the indisposition often associated with active teething at this age.

With a view to establishing as far as possible the question of how far the fact of artificial feeding should be held responsible for the deaths of the 136 babies who had been wholly or partially artificially fed before the age of 8 or 9 months, a special analysis of these cases has been made.

The enquiry covers (1) the condition of the infants as to congenital defectiveness, (2) the existence or not of definite illness in the babies at the time artificial feeding was commenced, (3) the number of infants who suffered from gastro-intestinal inflammations, infections and toxæmias while under observation in the Clinic or Hospital, and of these (*a*) the month of the year of the first or only attack, (*b*) the mode of feeding, whether entirely breast-fed or infant receiving some artificial feeding at the time of the attack, (*c*) the number of infants who gave a history of suffering from such diseases from birth, (*d*) the number of the infants who were certified as dying from such diseases.

Of the 136 *Infants* :—

114 (**83·84** per cent.) had shown symptoms of illness from birth.
127 (**93·39** per cent.) were congenitally defective as follows :—
  21 (**15·45** per cent.) were born in a state of malnutrition.
  33 (**24·26** per cent.) were on registration under the minimum normal birth length.
  28 (**20·60** per cent.) were on registration under the minimum normal length for age.
  49 (**36·03** per cent.) were born prematurely.
  112 (**82·37** per cent.) presented clinical symptoms of congenital syphilis.
104 (**76·48** per cent.) were definitely ill already when artificial feeding was commenced.
83 (**61·03** per cent.) suffered from one or more attacks of gastro-intestinal inflammations, infections, and toxæmias while under observation in the clinic or hospital.

Of these 83 *Infants* :—

40 (**48·19** per cent.) had the first or only attack of gastro-intestinal disease in the period June–September inclusive, and the remainder during the period October to May.
66 (**79·52** per cent.) of the infants were receiving some artificial feeding at the time of the onset of the disease, and 17 (**20·48** per cent.) were entirely breast-fed.
18 (**21·69** per cent.) of the infants were stated to have suffered from the gastro-intestinal disease "from birth," and of these **11** were at the time of the attack entirely breast-fed, and **7** were receiving some artificial feeding.
14 (**16·86** per cent.) were certified as dying of gastro-intestinal disease. Of these 10 died in the period May–September inclusive, 2 in October, and 2 in November.

Chart III. shows graphically the month of the year in which the attacks occurred and mode of feeding of the 83 infants at the time.

The conclusions reached as a result of this enquiry as to the responsibility of artificial feeding as a primary factor in the causation of these deaths are in agreement with those stated in my last report, viz., that "any argument based upon the excess of artificially-fed infants to the effect that artificial feeding was the cause of a number of these deaths would be wholly fallacious since, as our figures show, the majority of all infants arriving at the Centre are, unfortunately, artificially fed from an early age, and a majority must, therefore, be expected among the infants subsequently dying. It must further be remembered that those artificially-fed infants who died as a result of milk infection died primarily in many cases because they were congenitally defective and pre-disposed to such infection, and because they were badly mothered or housed, or provided with contaminated milk, and these deaths, owing to the incidence of a cool, wet summer, were a relatively small number. To state these facts is in no sense to minimise the importance of breast feeding (the value of which can never be stated), where this is available, nor is it to under-estimate its especial value as a safeguard against infection and digestive difficulty in the case of defective babies. It is to warn against erroneous conclusions based on insufficient or unreliable data, and to insist upon the importance of antenatal supervision and the provision of clean milk for that large number of infants who are at present being artificially fed."

I would again repeat that in the absence of our due recognition of these facts, while we search for and seek to remedy those factors underlying artificial feeding, the return of hot, dry summer-autumn weather will result in the loss of a large number of infant lives needlessly sacrificed.

State of Nutrition on Registration at the Clinics.—Of the 148 infants the state of nutrition was normal in only 33 (**22·30** per cent.) of the cases ; it was subnormal in 28 (**18·92** per cent.) and bad (extreme atrophy and marasmus) in 87 (**58·78** per cent.).

Of the 778 infants registered during the year whose state of nutrition was good only 33 (**4·24** per cent.) died, while of the 828 infants registered whose state of nutrition was bad or subnormal 115 (**13·89** per cent.) died.

General Disease Incidence During Attendance.—The 148 infants, while under observation at the Clinics during the year presented and shared among them 1,677 diseases and defects (Table X.), an average per infant of **11·33.** A comparison of this figure with that of the 2,024 infants under observation during the year who survived (**6·23**), shows that the general disease incidence of the babies who died was nearly twice as high as that of those surviving, and this increased incidence in the case of infants who die is fully supported by our practical experience. This fact is one of a number presented in the various paragraphs of this section which furnish proof that the problem of infant mortality is not that of healthy infants struck down by attacks of acute disease such as respiratory, gastro-intestinal, etc., and succumbing to these, but of congenitally defective infants whose ill-health is chronic, who are subject to many attacks of more or less acute intercurrent illness, generally infections, and who are carried off usually by one of these.

Of the 148 infants suffering from these 1,677 diseases and defects, 119 (**80·41** per cent.) had shown symptoms of illness from birth.

Of the 711 infants registered suffering from some disease or defect but not giving a history of the duration of symptoms from birth 29 (**4·08** per cent.) died, while of the 895 infants so registered and giving such history, 119 (**13·30** per cent.) died. The increased general disease incidence and percentage of cases showing symptoms of illness from birth in the case of the babies who died lead us indirectly to the definite conclusion that these infants were born defective, and make the relationship between congenital defectiveness and infant mortality clear.

Congenital Defectiveness.—Of the 148 infants, 136 (**91·89** per cent.) were congenitally defective according to the definition given on page 38.

35 (**23·65** per cent.) were born in a state of malnutrition.

30 (**20·27** per cent.) were on registration under the minimum normal birth length (20 ins.).

51 (**34·46** per cent.) were on registration under the minimum normal length for age.

22 (**14·86** per cent.) had been born prematurely.

120 (**81·08** per cent.) presented clinical symptoms of congenital syphilis.

Of the 616 infants registered during the year who were not congenitally defective in any way only 12 (**1·95** per cent.) died, while of the 990 infants registered who were congenitally defective 136 (**13·73** per cent.) died.

Dealing with the separate groups, the increase with one exception is equally evident as will be seen below :—

Of the 1,419 infants registered not born in a state of malnutrition, 113 (**7·96** per cent.) died, while of the 187 infants registered who were born in a state of malnutrition 35 (**18·72** per cent.) died.

Of the 1,470 infants registered who were on registration not under the minimum normal birth length (20 ins.), 118 (**8·03** per cent.) died ; while of the 136 infants who were 30 (**22·06** per cent.) died.

Of the 1,015 infants registered who were not on registration under the minimum normal length for age 97 (**9·56** per cent.) died ; while of the 591 infants registered who were 51 (**8·63** per cent.) died.

Of the 1,477 infants registered who were born at the full term of pregnancy 126 (**8·53** per cent.) died, while of the 129 infants registered who had been prematurely born 22 (**17·05** per cent.) died.

With regard to the exception, the infants who were on registration under the minimum normal length for age, this slight decrease is I think explained by the fact that more of the infants, since most of them died so young, were under the minimum normal birth length (20 ins.) on registration, and therefore appear in that column serving to swell the figure there, rather than in that for under-length at the later ages.

Prematurity.—Of the 148 infants dying, 22 (14·86 per cent.) had been prematurely born.

The following analysis of the deaths of the premature and full-time infants under our care during the last five years shows the death rate of the prematurely born infants to be almost twice as high as that of full-time babies, and this well illustrates the diminished expectancy of life in the case of premature children.

Year	Registered full-time infants	Registered premature infants	Full-time infants dying	Premature infants dying	Per cent. of full-time infants dying	Per cent. of premature infants dying	No. of infants certified as dying of "prematurity"
1914	2353	135	154	16	6·54	11·85	5
1915	1877	110	187	20	9·96	18·18	8
1916	1856	142	167	24	8·99	16·90	10
1917	1633	88	160	19	9·79	21·59	2
1918	1477	129	126	22	8·53	17·05	5
	9196	604	794	101	8·63	16·72	30

It should be noted, however, that 503 (83·28 per cent.) of the premature babies *survived.* While a greater liability to death may exist in all cases it would seem to be rather the *cause* of the prematurity or some factor existing in association with it, than the fact of prematurity itself which determines the mortality of infants prematurely born but viable. Many premature babies who were otherwise healthy even if feeble, *e.g.*, an infant born prematurely as the result of a fright or shock experienced by the mother who is healthy, receiving the special care necessary, and even some who did not, have in my experience made good progress, but of infants who were both premature and diseased very many have died despite the greatest care, and in such cases the disease itself and not any complication of prematurity has been responsible almost invariably for the deaths. In a few cases serious illness in the mother during pregnancy has appeared to so retard the development and reduce the vitality of the infant that apart from disease it has died. There is I think a general tendency to regard the fact of prematurity after the 7th month as itself a sufficient cause of death, and in such case less effort will be made to discover the cause of prematurity, though upon this depends so largely both the prognosis in any case and the fatality of the condition.

This question is obviously of great importance, nationally speaking, in view of the fact stated by Dr. Stevenson in the Registrar-General's Report for the year 1917, that " 46 per cent. of the total mortality of the first 4 weeks is attributed to this cause " (*i.e.*, prematurity) (1).

It is also of special importance to us locally in view of the fact that he states that " the mortality of the North at this age is no less than 25 per cent. in excess of that of the South " (2).

And that " almost half the total difference in mortality between North and South is accounted for under the head of premature birth alone " (3).

He further states that in the North the " mortality for premature birth is 11 per cent. above that for the whole country, whereas in the South it is 10 per cent. below it " (4).

As to the causes of mortality from premature birth, Dr. Stevenson in discussing the possible relation of prematurity and the industrial employment of women, concludes from the fall which has occurred in mortality from prematurity from 1901–1917 despite the greatly increased factory employment of women during the war that " in the face of these facts it is doubtful how far greater industrial employment of women can be invoked as the cause of higher mortality in the North from premature birth."*

Our observations lead us to a similar conclusion. There can be no question, however, that ill-health in the industrially employed mother or her underfeeding, work under unhygienic conditions or employment on too heavy or unsuitable work, must involve increased strain, and this would tend to reduce the child's stock of vitality and also probably affect its state of nutrition at birth even if it did not cause premature birth or death from prematurity. During the last three months of pregnancy such considerations must owing to the active development of the child and call upon the mother's reserves during this period, be of the highest importance, and the avoidance of all physical overstrain and insurance of sufficient rest and of adequate nourishment then are very essential.

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(1) Page XXXVII. ; (2) Page XXXIII. ; (3) Page XXXVII. ; (4) Page XXXVIII.

* Page XXXVIII.

In the case of the 129 premature babies registered during the year :—

Of the 129 *Mothers* :—

42 (**32·56** per cent.) worked during their pregnancies, in 23 cases in a mill. The periods of pregnancy during which the 42 mothers worked were as follows :—

1—3 months.	3—5 months.	5—7 months.	8—9 months.
13	5	11	13

79 (**61·24** per cent.) gave a history of ill-health during pregnancy. Of these, in 69 cases the ill-health was chronic, and 5 had had ante-partum hæmorrhage ; 3 were suffering from ill-health during the whole pregnancy seemingly associated with this. Of 50 cases in which the mothers were healthy women, 7 had had acute illnesses during pregnancy, in each case Influenza, of which one died after confinement.

Of 8 other mothers who were healthy, 4 had had shocks during pregnancy ; in 1 case a fall ; in 1 case a husband killed in action ; in 1 case husband killed in action, the mother's father died suddenly, and she also had influenza ; and in 1 case the mother's sister died of " galloping consumption " and another sister was dying of the same.

72 of the mothers had had previous pregnancies. Of these 43 had previously lost among them 83 children antenatally or postnatally.

Of the 129 *Fathers* :—

50 (**38·76** per cent.) were stated to be suffering from chronic ill-health, of 15 the health history was unknown.

Of the 129 *Infants* :—

66 (**51·16** per cent.) were suffering from congenital syphilis.

22 died during the year, of whom 19 were syphilitic ; 7 only were certified as dying of " Prematurity," and 5 were certified as dying of congenital syphilis.

Congenital Syphilis.—There has been a definite increase during the last 3 years in the incidence of this disease among the infants. The following table shows the number of cases attending, the number dying and the number certified as dying of congenital syphilis in each of these years :—

Year	No. of all infants att'nding	Syphilitic infants attending		Increase or Decr'ase	No. of all infants dying	Syphilitic infants dying		Increase or Decr'ase	Cases so certified		Increase or Decr'ase
		No.	Per cent.			No.	Per cent.		No.	Per cent.	
1916	2731	670	**24·54**	—	191	107	**56·02**	—	25	**13·10**	—
1917	2441	832	**34·08**	**+9·54**	179	140	**78·21**	**+22·19**	58	**32·41**	**+19·31**
1918	2172	763	**35·13**	**+1·05**	148	120	**81·08**	**+2·87**	38	**25·69**	**—6·72**

It will be seen that there was a considerable increase in 1917 both in the number attending, number dying, and number certified. In this connection, Dr. Stevenson's figures and deductions are of particular interest. After showing that the syphilis mortality was in that year "higher than it had been since 1895," that "most of the increase was due to a sudden rise in infant mortality," and that "this mainly affected illegitimate infants,"* he says "It seems probable therefore that the war has caused an increased number of deaths of infants, particularly illegitimate infants from syphilis. . . The increase, however, appears to have reached its maximum in 1917, the first two quarters of 1918 showing some abatement."† Our own returns for 1917 (when the infant mortality of the City showed a sudden rise) and for 1918, as will be seen in the foregoing table, correspond fairly closely with the above statement for the country as a whole. There is undoubtedly "some abatement" in that the increase both in the number of cases diagnosed and the number of cases dying is much smaller in 1918, but there is no *decrease* except in the deaths certified as such. The increase in infantile syphilis mortality in 1917 must account for the increase in the total infant mortality of the Infants' Department of that year, the figure then being **7·33** per cent. of the infants attending as against **5·60** per cent. in 1914, **6·88** per cent. in 1915, **6·99** per cent. in 1916, and **6·81** per cent. in 1918.

As has been seen of the 148 infants dying during the year under review 120 (**81·08** per cent.) were so affected, and the existence of this disease in these infants accounts for a considerable number of the affections of the skin, bones and joints, nervous system, gastro-intestinal tract, nose, etc., for many of the anæmias and various forms of congenital defectiveness which have been returned in Table X.

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* Report of the Registrar-General for England and Wales, for the year 1917. Page LIX. ; † Page LXI.

The relationship of the disease to infant mortality is seen in the following table, in which the mortality of syphilitic and non-syphilitic infants is compared :—

Year	No. of infants attending not syphilitic	No. of infants attending diagnosed as syphilitic	Infants not syphilitic who died		Infants diagnosed as syphilitic who died	
			No.	Per cent.	No.	Per cent.
1916	2061	670	84	4·07	107	15·97
1917	1609	832	39	2·42	140	16·82
1918	1409	763	28	1·99	120	15·72
TOTALS	5079	2265	151	2·97	367	16·20

In this connection I would repeat the views I have emphasised in previous reports that while, as will be seen, the larger proportion of infants affected survive and some from a nutritional point of view at least make fair progress, of all infants who *die* from various certified causes a very large proportion are found to have been so affected. This statement applies to the observations made in each of the 6½ years' work of the Department, though the actual number of infants affected has definitely increased during the war. Further, that as a factor in infant mortality the disease would seem to act frequently as an indirect rather than a direct cause of death by rendering the infant especially liable to common infections and by depriving it of the power of recovery from ordinary diseases attacking. This fact, I believe, among others, helps to explain the always considerable under-statement of congenital syphilis in infantile death certification. It also in all probability frequently accounts for failure to recognise the disease in infants not previously under observation before the onset of a more or less acute illness due to a secondary infection, which then dominates the scene. In the absence, therefore, of continued expert supervision, including regular and complete examination of the infants especially of the poorer and less intelligent working-class, it is improbable that any true estimate of either the incidence or fatality of this disease in infancy can be made.

It is acknowledged that the mortality rate of the disease as evidenced by infant death certificates gives no true indication of its fatality rate.

An analysis of the number of cases attacked by and dying of respiratory* and gastro-intestinal diseases† (which are known to be principal " killers " in infancy) and congenital syphilis, among the 7,344 infants under observation during the last three years is given in Table XI.

It should be noted that while the " attack " rates of the more serious forms of respiratory and gastro-intestinal diseases are both fairly high, both the " attack " and death rate of the latter are unusually low, much lower than in ordinary years.‡

In the case of congenital syphilis it will be seen that the percentages of infected infants who died were much larger than those of infants certified as dying from the disease. I believe that this is largely explained by the fact already stated, viz., that syphilitic infants are peculiarly selected for attack by infections, which kill them in much larger numbers than infants not so affected. In such case, the deaths would naturally and often quite properly be returned in the groups " Respiratory," " Gastro-intestinal," etc. It would in some cases be difficult to say whether the primary or secondary infection should be considered the fatal agent.

It will also be seen that of all the infants dying in the three years, **56·02** per cent., **78·21** per cent., and **81·08** per cent. respectively, had shown symptoms of congenital syphilis, and the existence of this disease in my belief, acting indirectly, furnishes the reason why many of these infants succumbed to the infections just mentioned. The deduction here is that a syphilitic infection or taint not only increases the liability to attack by common infections, but so greatly increases the risk of death from these that the babies so affected are the babies who die for the most part, while others attacked but not so affected in many cases survive. Recognition of these facts, which are so little self-evident, I feel to be vital for the prevention of infant mortality.

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* Bronchitis and Pneumonia. A large number of cases of bronchial catarrh, many of which were actually bronchitis of a more or less sub-acute nature, have been excluded here as being less definitely " killers." Had they not been, the " attack " rate, for respiratory diseases, would have been very much higher.

† Inflammations, infections, and toxæmias.

‡ Owing to the exceptionally favourable climatic conditions both the incidence and death rate of gastro-intestinal disease has been exceptionally low during the last three years. The figures for the year 1914, which may be taken in this respect as perhaps an average year though not a bad year, were for " attack " rate of the 3,033 infants attending 1,000 (32·97 per cent.), and for death rate of the 170 infants who died 36 (21·17 per cent.) or 3·60 per cent. of the infants attacked.

Apart from the syphilitic infants succumbing to secondary infections, the fact that mere *symptoms* such as " atrophy," " marasmus," " debility," " convulsions," etc., are and sometimes have to be, in the case of infants so frequently returned as if they were the causes of death, undoubtedly results in the inclusion of many deaths more or less directly due to congenital syphilis in these groups. In some cases in which the infants seem to die more directly from the effect of the disease itself the localisation and effect would from the signs and symptoms seem to be especially marked in the case of the nervous system, blood-vessels, and liver.

Speaking from the standpoint of medical responsibility, we require for the prevention of these deaths early and continued supervision of infants at Infant Health Centres, by those with pediatric knowledge and experience, in order to ensure for infants affected both early diagnosis and the very varied and prolonged treatment which is necessary in so many of the cases. But above all we require the institution of comprehensive schemes of antenatal care whereby among other important undertakings, mothers requiring it may be given systematic anti-syphilitic treatment, thus bringing the infants under treatment at a much earlier period of their development, and hence much more favourable stage of the disease from the point of view of hope of cure.

Treatment of Mothers of Syphilitic Infants.—During the year, 45 mothers of syphilitic infants attending the Clinics have been referred to the special Centre established by the Health Committee for the anti-syphilitic treatment of such mothers and those of children attending the Child Clinic. The work of this essentially preventive department of our Maternity and Child Health provision, of which the chief object was the endeavour to protect subsequent infants who might be born in such families, was only initiated at the end of 1916 and has been greatly limited by war conditions. The names of a number of mothers therefore whom we had, often with difficulty, persuaded to attend this Venereal Disease Centre, and who refused to attend any other, were still on a waiting list at the end of the year owing to inadequate accommodation, equipment, and laboratory facilities. Four fathers of infants attending were also referred and treated, in one case with the mother of the infant, in the other 3 cases the mothers were dead.

Infectious Fevers.—Of the 2,172 infants attending during the year, 198 (9·13 per cent.) suffered from infectious fevers, and of the 198 infants attacked, 23 (11·61 per cent.) died. The " attack " rate of these diseases was therefore relatively low as is usual in the first year by comparison with that in later childhood, but their fatality rate is fairly high.

The following are the figures for the individual infectious fevers :—

Disease	No. of all infants attending during the year	All infants attacked		Infants attacked who died and were so certified	
		No.	Per cent	No.	Per cent
Whooping Cough . .	2172	105	**4·84**	7	**6·66**
Measles	2172	39	**1·79**	6	**15·39**
Influenza	2172	41	**1·89**	9	**21·95**

Of all the infectious fevers, Whooping Cough most commonly affects the infants, but its fatality rate is fairly low. Measles affects a very small number of infants, but is much more fatal. Influenza this year also, as will be seen, affected relatively few infants, but it was very fatal.

The infectious fevers are like other infections particularly fatal to congenitally syphilitic infants, and this is especially true of Measles.

Certified Causes of Death of the 148 Infants.—The causes of death as medically certified are classified in the ensuing table, and shown graphically in Chart II.

Disease	No. of cases	Per cent.
Congenital Syphilis	38	25·69
Respiratory Diseases	22	14·86
Marasmus and Atrophy	16	10·81
Gastro-intestinal Diseases	14	9·46
Influenza	9	6·08
Congenital Defect and Debility	7	4·73
Hydrocephalus and Meningitis	7	4·73
Whooping Cough	7	4·73
Measles	6	4·05
Prematurity	5	3·38
Tuberculosis	5	3·38
Convulsions*	4	2·70
Congenital Malformations	2	1·35
Cellulitis and Pyæmia	2	1·35
Cerebral Hæmorrhage	2	1·35
Diphtheria	1	·67
Acute Sclerema	1	·67

* Of these in 2 cases inquests were held.

DEATH PARTICULARS:		
Died in our care and certified by us	*65	43·92
Sent to other Institutions by us and died there ..	18	12·16
Defaulted from treatment at Clinics and died subsequently at home or in other institutions	65	43·92
* 36 died in the Infants' Hospital.		

Infant death certificates for reasons which have been discussed, and others, give little or no scientific information of the cause of death, and hence little light is thrown upon the subject of infant mortality, either locally or for the country as a whole, by a study of these. There is undoubtedly a very great necessity for more *clinical* data for such study than are available, or published, at present. More exact diagnosis and certification of the disease causing death seems essential for the ultimate prevention of infant mortality, but in pursuance of the newer ideal of preventive medicine, which in regard to infancy is so specially and inevitably before us, it would seem in addition necessary to go even further than this and to study the facts underlying or contributing to the incidence of the disease. This much-needed research has been discussed on page 54.

At the present time, experience shows that the remedies indicated are both an improved environment and an improved state of health and development at birth, remembering that much stress has rightly been laid upon the former, but much too little on the latter. In other words, our observations and statistics indicate very definitely that infant welfare measures like parental responsibility, properly conceived, must in the future secure not only the healthy rearing of a child, but the production of a perfectly healthy and normally developed child in the first instance.

I think there is no question but that our efforts in the country generally have been directed too exclusively in the past towards teaching the mother the principles of mothercraft and endeavouring to improve the post-natal environment of the baby. That such efforts have borne fruit in the reduction of our infant mortality seems indisputable. Dr. Stevenson's statement that the fall in Infant Mortality in England and Wales " during the 17 years of the present century has been 27 per cent. during the first 3 months, 50 per cent. at 3—6 months, and 43 per cent. at 6—12 months "* is so far encouraging. He tells us, however, that 64,483 babies died during 1917 ; and in reference to the first three months that " to judge by the 13 years for which the separate mortality of the first month of life is on record, much the greater part has been contributed by the 2nd and 3rd months, the improvement in the first 4 weeks, which now furnish over one-third of the total deaths of the year, not being great."†

The saving of these infant lives in this earlier period is dependent very largely upon measures for the prevention of that congenital defectiveness which also underlies so great a number of the deaths still occurring at the later ages in the first year.

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* Registrar-General's Report for 1917, page XXXII.

† Registrar-General's Report for 1917, page XXXIII.

TABLE IX.—Occupations of the Parents of the 148 Infants dying during the year.

Occupations of Mothers (before marriage)	No.	Per cent.	Occupations of Fathers.	No.	Per cent.
Textile Trades ..	101	68·25	Soldiers (present army)	54	36·51
Domestic	19	12·84	Labourers	27	18·24
No trade—lived at home	8	5·41	Textile Trades ..	17	11·49
Laundress	5	3·38	Other Trades	23	15·54
Clerks	4	2·70	Munitions	9	6·08
Shop Assistants and Dressmakers ..	5	3·38	Carters	4	2·70
Machinists	2	1·35	Shop Assistants ..	4	2·70
Various	2	1·35	Railway and Municipal Employees ..	4	2·70
Unknown	2	1·35	Brewery and Publican Trades	2	1·35
			Unknown	4	2·70
	148			148	

TABLE X.—Disease Incidence of the 148 Infants Dying during the Year.

Affection or System.	No. of Cases.	Actual Disease.	No. of Infants	Per cent.
Bones, Joints, and Muscles	218	Abnormal Head Ossification	110	74·32
		Chronic Epiphysitis (ribs)	47	31·76
		Chronic Epiphysitis (wrists)	2	1·35
		Acute Epiphysitis	3	2·03
		Delayed Muscular Development	32	21·62
		Abnormal Chest Formation	22	14·86
		Curved Tibiæ	1	·68
		Dactylitis	1	·68
Ear	16	Discharging Ears	13	8·78
		Earache	3	2·03
Eye	49	Conjunctivitis	32	21·62
		Ophthalmia Neonatorum	10	6·76
		Blepharitis	5	3·38
		Stye	2	1·35
Gastro-intestinal	176	Gastro-intestinal Inflammations, Infections, and Toxæmias	77	52·03
		Constipation	41	27·70
		Chronic Vomiting (not of gastro-intestinal origin)	31	20·95
		Intestinal and Gastric Hæmorrhage	14	9·46
		Dyspepsias	6	4·05
		Anal Fissures	4	2·70
		Diarrhœa (simple and symptomatic)	2	1·35
		Intestinal Parasites	1	·68
Genito-urinary	34	Phimosis	23	15·54
		Albuminuria	3	2·03
		Orchitis	2	1·35
		Nephritis	2	1·35
		Vaginitis	1	·68
		Pyelitis	1	·68
		Urethritis	1	·68
		Pyclo-nephritis	1	·68
Glandular	36	Adenitis, Chronic (mostly multiple)	28	18·92
		Adenitis, Acute	2	1·35
		Mastitis Neonatorum	5	3·38
		Adenoids	1	·68
Heart and Circulatory	123	Anæmias	103	69·59
		Heart Disease (congenital)	8	5·41
		Heart Affections (acquired)	8	5·41
		Acute Endocarditis (Influenzal)	3	2·03
		Enlarged Spleen	1	·68
Carried forward	652			

Affection or System.	No. of Cases.	Actual Disease.	No. of Infants	Per cent.
Brought forward	652			
Infectious Fevers	35	Whooping Cough	13	8·78
		*Influenza	11	7·43
		Measles	10	6·76
		Diphtheria	1	·68
Liver	23	Cirrhosis of Liver	10	6·76
		Acidosis	7	4·73
		Jaundice of the newly born	6	4·05
Malformations (Congenital), etc.	23	Undescended Testicles	7	4·73
		Of External Ear	3	2·03
		Palate abnormally shaped	3	2·03
		Supernumerary Digits	2	1·35
		Nævi	2	1·35
		Of External Genitals (Girl)	1	·68
		Hæmatoma Sternomastoid	1	·68
		Webbed Toes	1	·68
		Tongue-tie	1	·68
		Hare Lip	1	·68
		Cyst	1	·68
Mouth	103	Ulcers, Fissures & Patches	48	32·43
		Thrush	37	25·00
		†Generalised Inflammatory Congestion of Mucous Membrane	14	9·46
		Glossitis	3	2·03
		Stomatitis	1	·68
Nervous	221	‡Chronic Neurosis	96	64·87
		Convulsions	57	38·51
		Meningitis (Chronic)	17	11·49
		Meningitis (Acute), Influenzal	2	1·35
		Paralysis (Cranial Nerves)	12	8·11
		Laryngismus Stridulus	12	8·11
		Mental Deficiency	12	8·11
		Meningismus	3	2·03
		Paralysis (Limbs), ante and post natal origin	3	2·03
		Hydrocephalus	2	1·35
		Mongolism	1	·68
		Habit Spasms	1	·68
		Cerebral Hæmorrhage	2	1·35
		Tetany	1	·68
Nose	118	Chronic Obstructive Catarrh	113	76·35
		Epistaxis	5	3·38
Carried forward	1175			

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*6 cases pneumonia, 2 acute endocarditis, 1 acute meningitis, 1 general, 1 pyelo-nephritis, endocarditis and meningitis.

† Commonly seen in young infants suffering from congenital syphilis.

‡ Extreme continued degree of nervous tension, crying, restlessness and sleeplessness.

Affection or System.	No. of Cases.	Actual Disease.	No. of Infants	Per cent.
Brought forward ..	1175			
Respiratory	102	Bronchitis	42	28·38
		Bronchial Catarrh	22	14·86
		Pneumonia	18	12·16
		Laryngitis, Chronic.. ..	17	11·49
		Laryngitis, Acute	1	·68
		Pleurisy	1	·68
		Cirrhosis of Lung	1	·68
Ruptures	41	Umbilical	36	24·33
		Inguinal	5	3·39
Skin and Subcutaneous Tissues	133	Chronic Eruptions and Lesions (various) ..	119	80·41
		Scabies	7	4·73
		Condylomata	4	2·70
		Cellulitis	2	1·35
		Pyæmia	1	·68
Syphilis (Congenital), ..	120	Syphilis (congenital) ..	120	81·08
Teething	25	Delayed Teething	12	8·11
		Illness due to Teething ..	10	6·76
		Precocious Teething ..	2	1·35
		Carious Teeth	1	·68
Throat..	57	Faucitis	22	14·86
		Pharyngitis and Pharyngeal Catarrh	21	14·19
		Ulcers and Patches.. ..	8	5·41
		Tonsillitis	3	2·03
		Enlarged Tonsils	2	1·35
		Hypertrophied Uvula ..	1	·68
Tuberculosis	1	Pulmonary	1	·68
Umbilicus	23	Catarrhal Omphalitis ..	12	8·11
		Umbilical Hæmorrhage ..	7	4·73
		Septic Omphalitis	3	2·03
		Granuloma	1	·68
Total	1677			

TABLE XI.—INCIDENCE OF GASTRO-INTESTINAL, RESPIRATORY, AND SYPHILITIC DISEASE AMONG INFANTS ATTENDING AND DYING IN THE LAST THREE YEARS.

Year	Disease	No. of all infants attending	Infants attacked of all infants attending.		Infants attacked who died. *		No. of all infants dying	Infants attacked of all infants dying		Infants certified as dying of the disease	
			No.	Per cent.	No.	Per cent.		No.	Per cent.	No.	Per cent.
1916	Gastro-intestinal ..	2731	472	17·28	108	22·88	191	108	56·54	27	14·14
	Respiratory ..		300	10·98	50	16·67		50	26·18	37	19·35
	Congenital Syphilis		670	24·54	107	15·97		107	56·02	25	13·10
1917	Gastro-intestinal ..	2441	555	22·74	110	19·82	179	110	61·45	13	7·26
	Respiratory		422	17·29	48	11·37		48	26·81	33	18·42
	Congenital Syphilis		832	34·08	140	16·83		140	78·21	58	32·41
1918	Gastro-intestinal ..	2172	343	15·79	77	22·45	148	77	52·03	14	9·46
	Respiratory		448	20·63	60	13·39		60	40·54	22	14·86
	Congenital Syphilis		763	35·13	120	15·73		120	81·08	38	25·69

* Of this or other disease.

Chart II.

Certified Causes of Death (classified) of the 148 Infants dying in 1918.

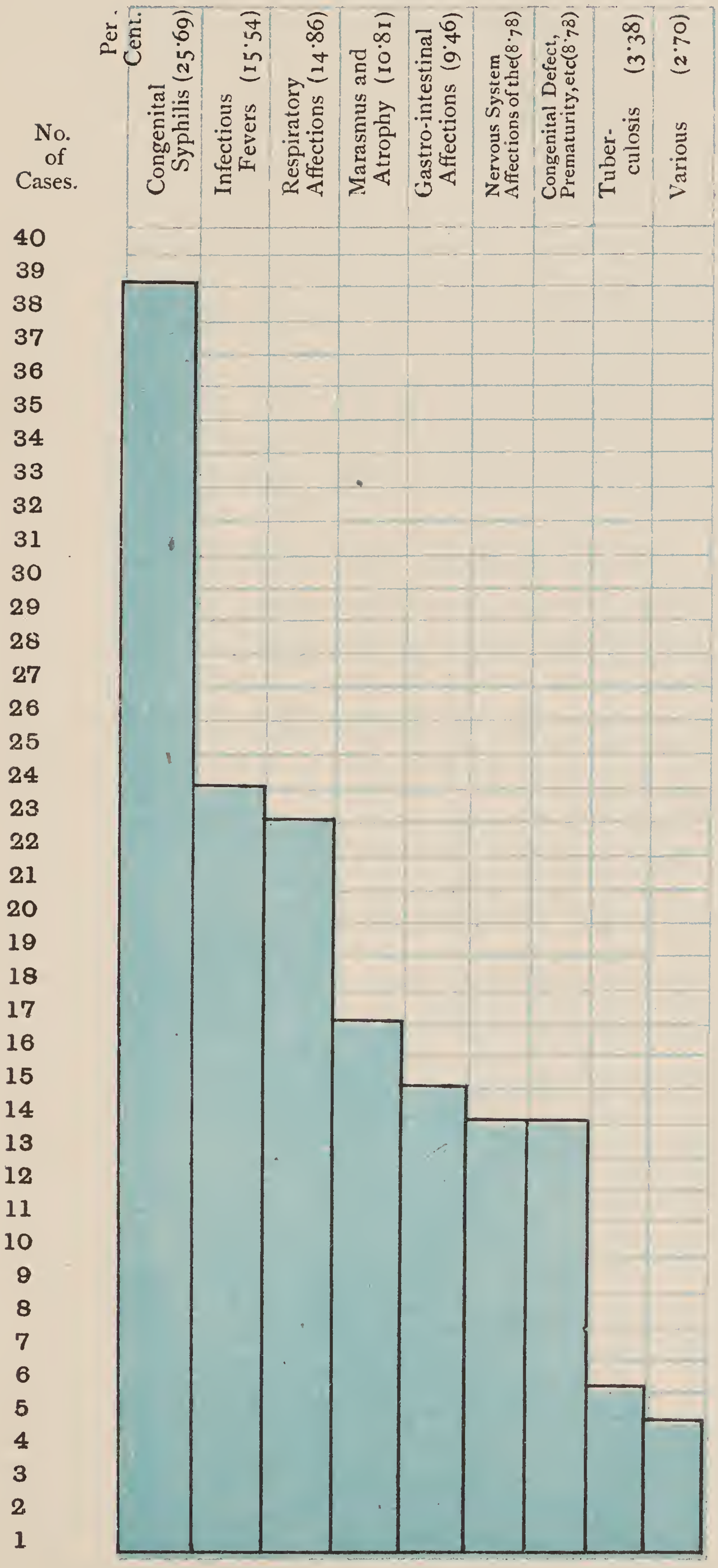


Chart III.

Ages at Death (148 Infants).

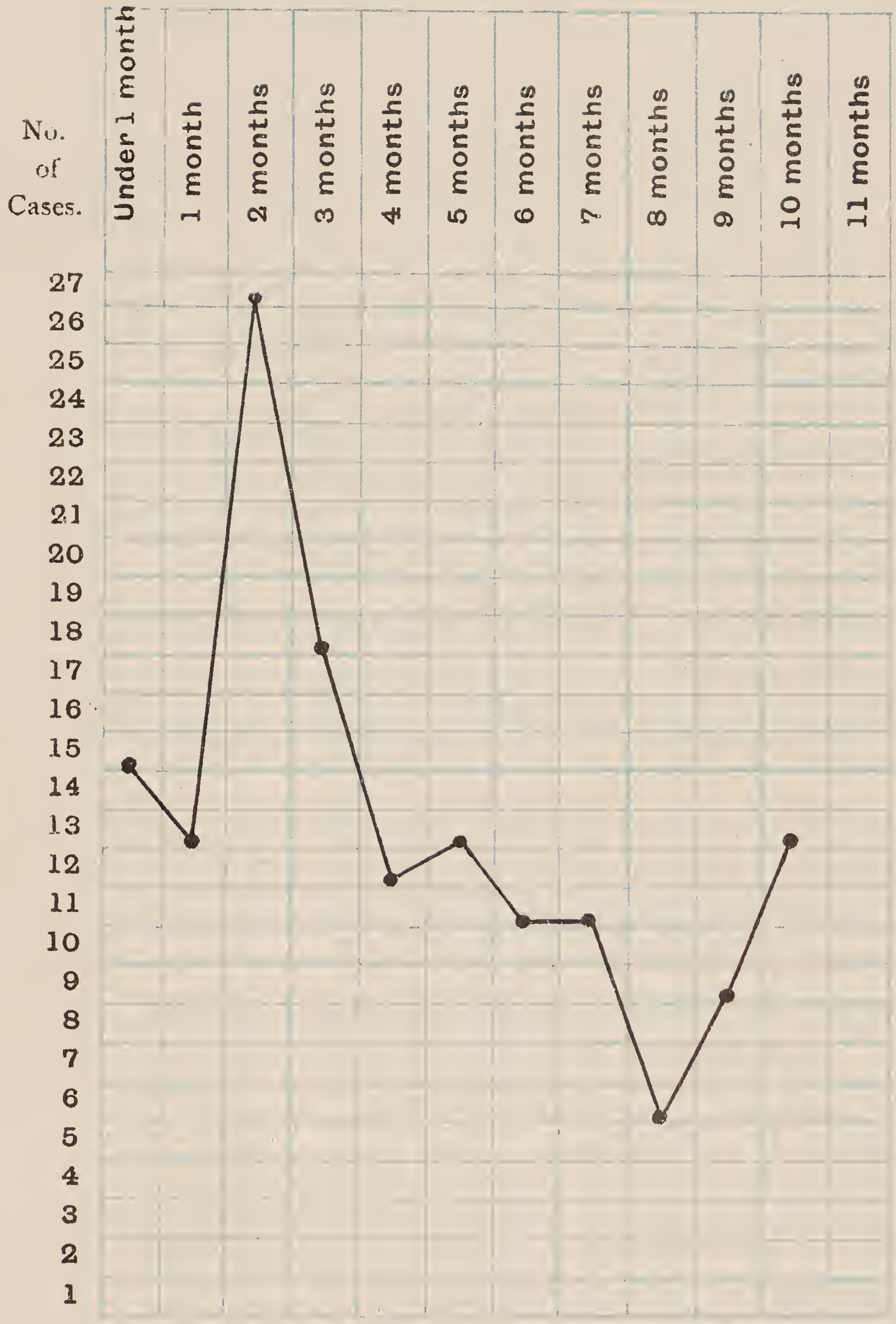


Chart IV.

Months of Death (148 Infants).

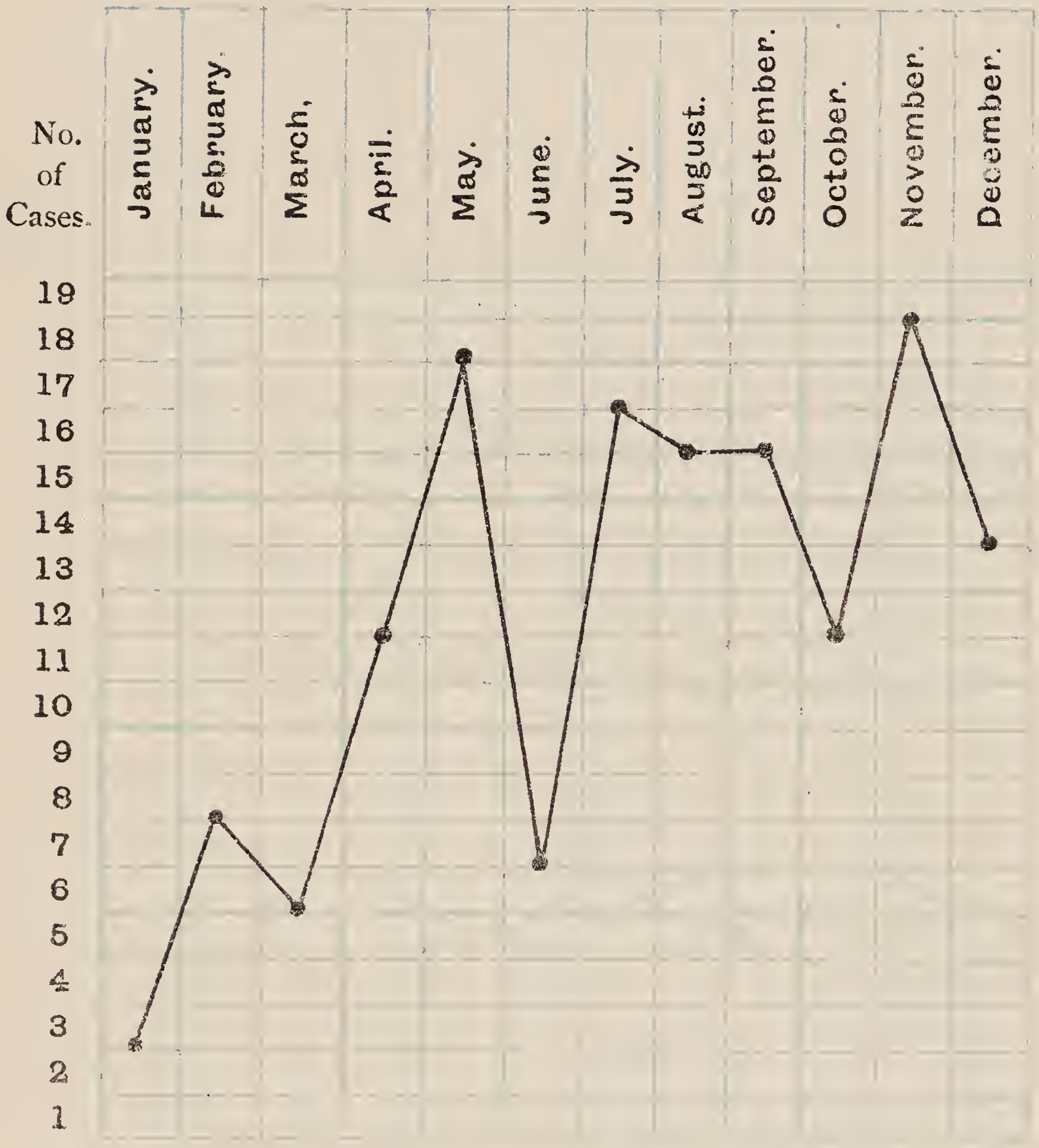
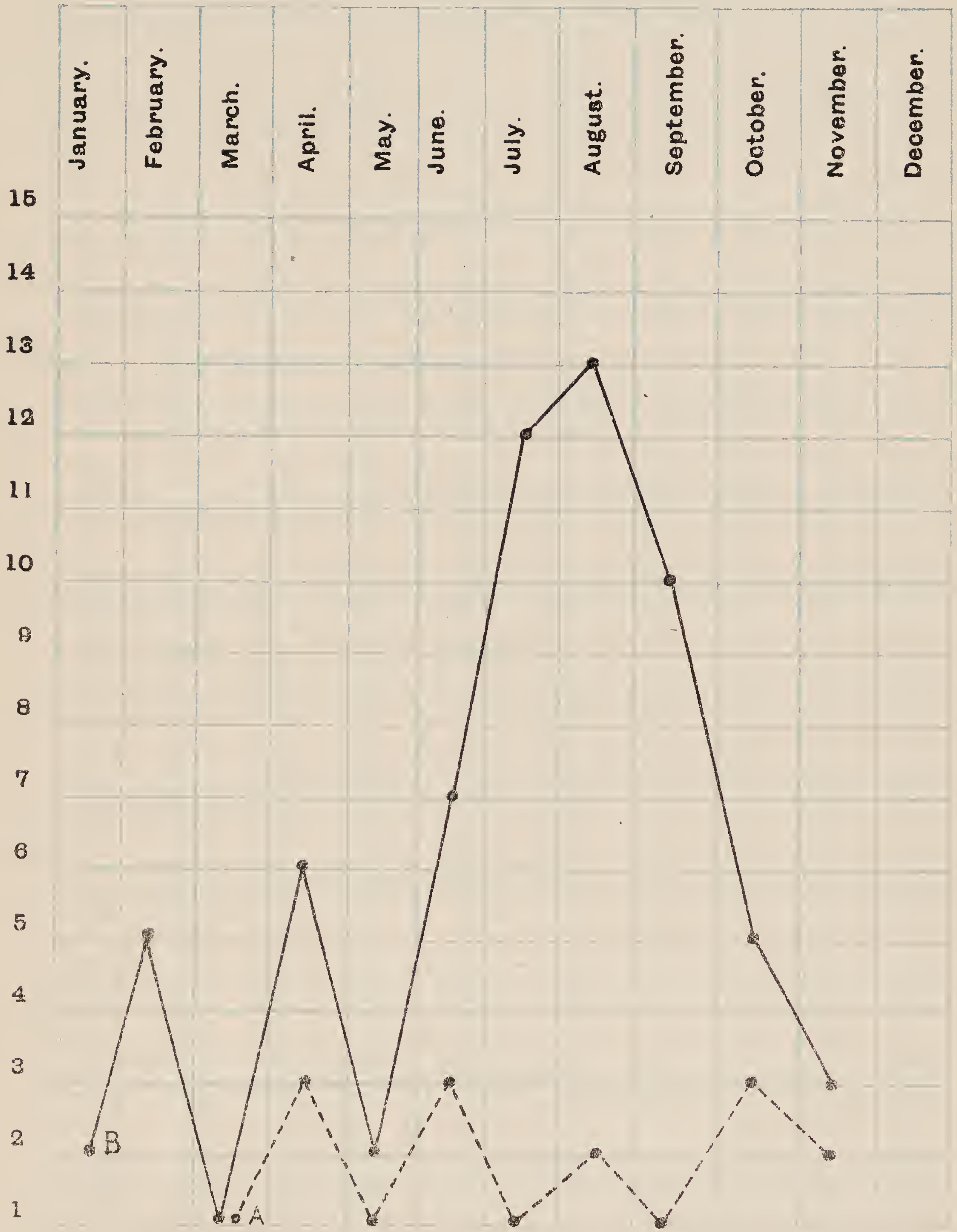


Chart V.

83 Cases of Gastro-intestinal disease (showing month of attack and mode of feeding at the time).



A = Babies entirely breast fed.
B = Babies wholly or partially artificially fed.

SECTION IV.

Of the 2,172 cases attending during the year, 427 (**19·66** per cent.) attained their first birthday in our care. The weights during the twelfth month, the quality of the "Mothering," and the number of visits paid by the 427 infants to the Clinics are shown in the ensuing tables :—

Weights during the Twelfth Month.

(427 CASES).

Under 14 lbs.	lbs. 14—15	lbs. 15—16	lbs. 16—17	lbs. 17—18	lbs. 18—19	lbs. 19—20	lbs. 20—21
8 1·87%	8 1·87%	17 3·98%	34 7·96%	53 12·41%	65 15·22%	60 14·05%	64 14·99%

lbs. 21—22	lbs. 22—23	lbs. 23—24	lbs. 24—25	lbs. 25—26	lbs. 26—27	lbs. 27—28
50 11·71%	29 6·79%	18 4·22%	13 3·04%	5 1·17%	2 ·47%	1 ·23%

Average Weight—20 lbs.

"MOTHERING" OF THE 427 INFANTS.

	No.	Per cent.
Good	197	**46·14**
Fairly good	158	**37·00**
Not good	72	**16·86**

NUMBER OF VISITS PAID BY THE 427 INFANTS.	No.	Per cent.
2—3	5	**1·17**
4—6	19	**4·45**
7—12	65	**15·22**
13—24	233	**54·57**
25—40	98	**22·95**
Over 40	7	**1·64**

INFANTS' HOSPITAL.

REPORT

OF THE

CHIEF MEDICAL OFFICER

FOR THE

YEAR ENDING 31st DECEMBER, 1918.

INFANTS' HOSPITAL.

ANNUAL REPORT, 1918.

The report deals with 212 cases treated during the year, 210 infants admitted and re-admitted from the Infant Clinics, one child admitted from the Child Clinic, and one infant already in Hospital on 1st January, 1918.

Social and general particulars of interest are given for only 162 of the 210 infants admitted since 48 of the cases were admitted more than once, in other words were re-admissions, and the particulars in regard to the infant transferred from the previous year had been already given.

All particulars regarding the child over one year of age are given subsequently in a separate section.

Particulars of the 162 Infants Admitted during the Year.

Social and General.

97 (**59·88** per cent.) were Boys and 65 (**40·12** per cent.) were Girls.
41 (**25·31** per cent.) were illegitimate.
29 (**17·90** per cent.) were children put out to " nurse."
18 (**11·11** per cent.) were twin children.

Ages.—The ages of the infants on admission are shown in the ensuing table :—

1—2 weeks	4
2—3 weeks	2
3—4 weeks	6
1—2 months	25
2—3 months	27
3—4 months	25
4—5 months	24
5—6 months	8
6—7 months	10
7—8 months	8
8—9 months	11
9—10 months	4
10—11 months	4
11—12 months	4

" Mothering," etc.—Of the mothers of the infants, 5 were dead at the time of the infant's admission.

In 42 (**25·92** per cent.) of the cases the " mothering " was good, in 24 (**14·82** per cent.) of the cases it was fairly good ; and in 96 (**59·26** per cent.) of the cases it was not good.

Health of Parents (as far as known).—Of the 162 families, 123 (**75·92** per cent.) of the mothers were unhealthy ; **24·69** per cent. were mentally defective or abnormal. Of the fathers 81 (**50·00** per cent.) were unhealthy, of 33 (**20·37** per cent.) the health was unknown, while 5 (**3·09** per cent.) were known to be mentally defective.

Reproductive Histories of Parents.

	No.	Per cent.
Mothers with no previous pregnancies	51	**31·48**
Mothers with previous pregnancies who had lost no children antenatally or postnatally	37	**22·84**
Mothers with previous pregnancies who had lost children antenatally or postnatally	74	**45·68**

Of these 74 :—

20 (**27·03** per cent.) had lost 33 children over one year among them
51 (**68·92** per cent.) had lost 84 infants under one year among them.
15 (**20·27** per cent.) had had 26 miscarriages.
19 (**25·68** per cent.) had had 24 stillbirths.

Therefore, the 74 mothers had lost among them 167 lives prematurely, which with the 17 infant deaths occurring among these families during the year, makes a total figure of 184, which represents an average of **2·48** lives per family.

State of Nutrition of the Infants on Admission.

	No.	Per cent.
Normal	19	**11·73**
Subnormal	14	**8·64**
Bad	129	**79·63**

Congenital Defectiveness.—Of the 162 infants, 156 (**96·30** per cent.) were congenitally defective according to the definition given on page 38 as follows :—

38 (**23·46** per cent.) were born in a state of malnutrition.
25 (**15·43** per cent.) were on registration under the minimum normal birth length (20 ins.).
61 (**37·65** per cent.) were on registration under the minimum normal length for age.
26 (**16·05** per cent.) had been prematurely born.
135 (**83·33** per cent.) were suffering from congenital syphilis.

Duration of Symptoms of Illness.—Of the 162 infants, 136 (**83·95** per cent.) had shown symptoms of illness from birth.

Diseases and Defects.—The 162 infants while under observation in the Hospital shared among them 1,722 defects and diseases, and these are shown in Table A. The percentages are given in relation to the number of infants and not to the number of diseases, since in spite of the fact that in the case of some diseases individual infants suffered from more than one attack, it seems best to include only the first attack of the infants on admission or re-admission.

It will be seen that 135 (**83·33** per cent.) were suffering from congenital syphilis. This large figure is to be explained by the fact that the hospital was almost entirely used for the treatment of these cases during the year, for the reason that infants suffering from this disease provided the most serious cases we had to deal with in the Clinics and because the intravenous method of administration of Salvarsan cannot be used for infants as out-patients.

Length of Treatment.—The average stay of an infant in the hospital was 15½ days. This average is considerably lowered by the inclusion of a fairly large number of cases admitted for observation purposes only for a brief period, and some cases of re-admission for the sole purpose of periodic treatment by salvarsan injection. Nevertheless, owing to the wholly inadequate number of cots available in proportion to the number of sick babies dealt with in the Clinics, and the necessity for admitting as many as possible of the cases most seriously ill, we have been quite unable to keep in many infants for the period we should have desired and considered necessary. In any case a considerable number of infants urgently requiring admission have not been admitted owing to the lack of cots, while many have defaulted from the Clinics and passed out of our care for this reason, and a large number of these have died.

Infections in the Ward.—Owing, I believe, to careful nursing, including the strictest attention to asepsis and precautions against the spread of infection and overcrowding, to the maintenance of abundant fresh air in the Ward, supplemented by an open-air ward, where the infants spend most of their time in all suitable weather, ward infections have been non-existent. Cases of infectious fever have been rare and limited, amounting only—excluding cases of Influenza—to 4 cases of Whooping Cough and 3 of Measles.

It has been necessary to immediately remove any infant discovered to be suffering from an infectious fever or definitely contagious complaint of any kind, there being no means of isolating or specially nursing such cases, owing to our limited accommodation and staff. The risk involved in the spread of the infection to the many very delicate and peculiarly susceptible infants resident there, if these infectious cases were retained, is one which, in my opinion, we should not be justified in taking.

During the Influenza epidemic at the end of the year, when three infants and most of the members of the staff suffered from this disease, the hospital had to be closed for a short period.

Particulars on Discharge.

Result	No.	Per cent.
Cured	2	·95
Improved, or result of treatment for which infant was admitted, satisfactory	70	33·18
Unimproved	27	12·80
Died in Ward	36	17·06
Removed for various reasons	8	3·78
Admitted for purposes of observation or special treatment only	68	32·23

It will be noted that only two infants were returned as "Cured." This because it is impossible honestly to state that infants taken in in the state of advanced malnutrition, in which the majority of these were admitted, infants obviously congenitally defective and especially those suffering from congenital syphilis were cured in the sense of being discharged healthy infants, even had their stay in the hospital been much more prolonged. In the cases of those infants returned as "Improved," the symptoms of disease or actual disease itself in evidence at the time of admission for the treatment of which the infant was admitted, were satisfactorily cured when the infant left the hospital.

Of the 8 cases returned as "Removed for various reasons," 7 were discharged on account of infectious complaint, and 1 was removed by relatives against our advice.

Subsequent History of the 126 Infants Discharged from the Hospital.

	No.	Per cent.
(1) Defaulted from the Clinics and lost sight of	53	42·07
(2) Discharged normally at one year of age	34	26·98
(3) Under observation at the end of the year	8	6·35
(4) Died during the year	31	24·60

(2) *Condition on Discharge* (34 infants).

As to *General Development*,* in 10 cases this was normal, in 16 cases subnormal, and in 8 cases bad.

As to *General Health*, in 5 cases this was normal, in 17 subnormal, and in 12 cases bad. Of the 34 infants 29 were syphilitic and 3 were mentally deficient.

---

* As to weight, length, muscular development and dentition.

(3) *Condition at the end of the year* (8 infants).

As to *General Development*,* in 1 case this was normal, in 1 case subnormal, and in 6 cases bad.

As to *General Health*, in 1 case this was normal, in 5 cases subnormal, and in 2 bad. Of the 8 infants 2 were syphilitic and 2 were mentally deficient.

(4) *Death Particulars* (31 infants).

Died while attending the Clinics ..	6	(of whom 2 died of Influenza after a brief illness).
Died in the Union Hospital ..	12	
Defaulted from the Clinics and died subsequently at home or in other institutions	13	

Particulars of the 36 Infants who Died in the Hospital.

Of the 36 *families :* The 17 mothers who had had previous pregnancies and lost children antenatally or postnatally had had among them by the end of the year a total antenatal and postnatal loss of 46 lives, representing an average of 2·91 lives per family.

Of the 36 *infants :*

21 (58·33 per cent.) were Boys and 15 (41·67 per cent.) were Girls.
2 were " nurse " children, 13 were illegitimate, and 6 were twin children.
30 (83·34 per cent.) were in a state of bad nutrition on admission.
31 (86·11 per cent.) had shown symptoms of illness from birth.
35 (97·22 per cent.) were congenitally defective according to the definition given on page 38 as follows :—

12 (33·33 per cent.) were born in a state of malnutrition.
7 (19·45 per cent.) were on admission under the minimum normal length at birth (20 ins.).
13 (36·11 per cent.) were under the minimum normal length for age.
5 (13·89 per cent.) had been born prematurely.
33 (91·66 per cent.) had congenital syphilis.

The diseases and defects of the infants while in the hospital are shown in Table B.

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* As to weight, length, muscular development and dentition.

LENGTH OF STAY IN HOSPITAL. (36 infants).	
Less than 48 hours	3 infants.
2—7 days	5 ,,
1—2 weeks	5 ,,
2—3 weeks	10 ,,
3—4 weeks	3 ,,
1—2 months	7 ,,
2—3 months	3 ,,

CERTIFIED CAUSES OF DEATH (Classified).		Per cent.
Congenital Syphilis	10	27·78
Chronic Enteritis	5	13·89
Chronic Meningitis	3	8·33
Marasmus	3	8·33
Prematurity	3	8·33
Influenza	2	5·55
Cerebral Hæmorrhage	2	5·55
Pyelo-Nephritis	1	2·78
Broncho-Pneumonia	1	2·78
Congenital defect and gastric and intestinal hæmorrhage	1	2·78
Cellulitis	1	2·78
Meningo-encephalitis	1	2·78
Pyæmia	1	2·78
Chronic Bronchitis	1	2·78
Congenital Heart Disease	1	2·78

Particulars of One Child aged 17 Months.

The child was admitted at the request of the Child Clinic suffering from Pneumonia dating from an attack of Measles 5 weeks before.

She was extremely atrophied, very undersized (slept comfortably in an infant's cradle), had very abnormal head ossification, and skin and mucous membrane lesions. The lung condition grew progressively worse, and she died 3 weeks later, aged 18 months, certified " Chronic Fibrotic Pneumonia."

The child had attended the Infant Clinic throughout her infancy and was extremely ill in the earlier period of this. Her blood was reported Wassermann " positive " at 3½ months old. During the last six months of the first year she made considerable progress, and weighed 19½ lbs. on discharge at 1 year of age, with normal muscular development.

TABLE A.—Diseases and Defects of the 162 Infants in the Hospital during the year.

Affection or System.	No. of Cases.	Actual Disease.	No. of Infants	Per cent.
Bones, Joints and Muscles ..	231	Abnormal Head Ossification	123	75·93
		Chronic Epiphysitis (ribs) ..	43	26·54
		Chronic Epiphysitis (wrists)	1	·62
		Acute Epiphysitis (syphilitic)	7	4·32
		Delayed Muscular Development	41	25·30
		Abnormal Chest Formation	11	6·80
		Curved Tibiæ ..	3	1·85
		Dactylitis	1	·62
		Arthritis	1	·62
Ear	22	Discharging Ears	22	13·59
Eye	43	Conjunctivitis	38	23·46
		Ophthalmia Neonatorum ..	2	1·23
		Blepharitis	2	1·23
		Conjunctival Hæmorrhage	1	·62
Gastro-intestinal	205	Gastro-intestinal Inflammations, Infections, and Toxæmias	114	70·37
		Gastric and Intestinal Hæmorrhage	45	27·79
		Chronic Vomiting (not of Gastro-intestinal origin)	29	17·90
		Constipation	8	5·00
		Anal Fissure	4	2·47
		Dyspepsias	2	1·23
		Prolapsus Ani	2	1·23
		Pyloric Stenosis	1	·62
Genito-urinary	48	Albuminuria	16	9·90
		Nephritis	10	6·17
		Pyelo-Nephritis	1	·62
		Phimosis	8	5·00
		Vaginitis	5	3·09
		Orchitis	3	1·85
		Hydrocele	2	1·23
		Renal Hæmorrhage ..	3	1·85
Glandular	49	Adenitis, Chronic (mostly multiple)	42	25·93
		Adenitis (acute)	4	2·47
		Mastitis neonatorum ..	3	1·85
Heart and Circulatory ..	138	Anæmias	119	73·46
		Heart Affections (acquired)	6	4·94
		Heart Disease (congenital)	5	3·09
		Enlarged Spleen	3	1·85
		Purpura	2	1·23
Carried forward ..	736			

Affection or System.	No. of Cases.	Actual Disease.	No. of Infants	Per cent.
Brought forward	736			
Heart and Circulatory (contd.)		Acute Endocarditis (Influenzal)	2	·62
		Hæmophylia	1	·62
Infectious Fevers	11	Whooping Cough	4	2·47
		Measles	3	1·85
		Influenza	3	1·85
		Septicæmia	1	·62
Liver	28	Acidosis	16	9·90
		Cirrhosis of Liver	10	6·17
		Jaundice of the newly born	1	·62
		Catarrhal Jaundice	1	·62
Malformations (Congenital), etc.	18	Palate abnormally shaped	7	4·32
		Nævi	2	1·23
		Hæmatoma Sternomastoid	2	1·23
		Hare Lip	2	1·23
		Undescended Testicles	1	·62
		Of External Genitals (Girl)	1	·62
		Of External Genitals (Boy)	1	·62
		Talipes Equinus	1	·62
		Of Thumbs	1	·62
Mouth	108	Ulcers, Patches & Fissures	84	51·85
		Glossitis	14	8·64
		Generalised Inflammatory Congestion of Mucous Membrane*	9	5·56
		Stomatitis	1	·62
Nervous	256	Chronic Neurosis†	99	61·12
		Convulsions	39	24·08
		Paralysis (Cranial Nerves)	29	17·90
		Meningitis (chronic)	19	11·73
		Meningitis (acute, influenzal)	1	·62
		Meningismus	18	11·12
		Mental Deficiency	17	10·50
		Laryngismus Stridulus	13	8·03
		Masturbation	6	3·70
		Paralysis (Limbs)	3	1·85
		Habit Spasms	3	1·85
		Tremors	2	1·23
		Mongolism	2	1·23
		Cerebral Hæmorrhage	2	1·23
		Cerebral Concussion	1	·62
		Hydrocephalus	1	·62
		Tetany	1	·62
Nose	110	Chronic Obstructive Catarrh	108	66·67
		Epistaxis	2	1·23
Carried forward	1267			

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* Commonly seen in young infants suffering from congenital syphilis.

† Extreme continued degree of nervous tension, crying, restlessness and sleeplessness.

Affection or System	No. of Cases.	Actual Disease.	No. of Infants	Per cent.
Brought forward ..	1267			
Respiratory	75	Bronchitis	27	16·67
		Laryngitis, Chronic	23	14·20
		Pneumonia	10	6·17
		Bronchial Catarrh	9	5·56
		Empyema	2	1·23
		Pulmonary Collapse ..	2	1·23
		Pleurisy	1	·62
		Cirrhosis of Lung	1	·62
Ruptures	22	Umbilical	14	8·64
		Inguinal	8	5·00
Skin and Subcutaneous Tissues	159	Chronic Eruptions and Skin Lesions (various) ..	145	89·51
		Cellulitis	8	5·00
		Condylomata	2	1·23
		Onychia	1	·62
		Fissures and Patches ..	1	·62
		Pyæmia	1	·62
		Dactylitis	1	·62
Syphilis (Congenital) ..	135	Syphilis (Congenital) ..	135	83·33
Teething	27	Illness due to Teething ..	9	5·56
		Delayed Teething	17	10·50
		Precocious Teething ..	1	·62
Throat	26	Faucitis	10	6·17
		Tonsillitis	10	6·17
		Pharyngitis and Pharyngeal Catarrh	4	2·47
		Tonsillar Ulcers & Patches	2	1·23
Umbilicus	11	Septic Omphalitis	6	3·70
		Catarrhal Omphalitis ..	4	2·47
		Umbilical Hæmorrhage ..	1	·62
Total	1722			

TABLE B.—Diseases and Defects of the 36 Infants dying in the Hospital.

Affection or System.	No. of Cases.	Actual Disease.	No. of Infants	Per cent.
Bones, Joints and Muscles	39	Abnormal Head Ossification	24	66·66
		Chronic Epiphysitis (Ribs)	8	22·22
		Acute Epiphysitis (syphilitic)	1	2·78
		Delayed Muscular Development	3	8·33
		Abnormal Chest Formation	3	8·33
Ear	5	Discharging Ears	5	13·89
Eye	12	Conjunctivitis	12	33·33
Gastro-intestinal	56	Gastro-intestinal Inflammations, Infections, and Toxæmias	30	83·34
		Gastric and Intestinal Hæmorrhage (4 Gastric)—	17	47·23
		Chronic Vomiting (not of Gastro-intestinal origin)	6	16·67
		Anal Fissure	2	5·55
		Prolapsus Ani	1	2·78
Genito-urinary	18	Albuminuria	7	19·45
		Nephritis	4	11·11
		Pyelo-Nephritis	1	2·78
		Vaginitis	3	8·33
		Orchitis	1	2·78
		Renal Hæmorrhage	2	5·55
Glandular	7	Adenitis, Chronic (mostly multiple)	5	13·89
		Adenitis, Acute	1	2·78
		Mastitis Neonatorum	1	2·78
Heart and Circulatory	35	Anæmias	25	69·44
		Heart Affections (acquired)	3	8·33
		Endocarditis (Influenzal)	2	5·55
		Enlarged Spleen	2	5·55
		Heart Disease (Congenital)	1	2·78
		Purpura	1	2·78
		Hæmophylia	1	2·78
Infectious Fevers	3	Influenza	3	8·33
Liver	6	Acidosis	4	11·11
		Cirrhosis of Liver	2	5·55
Malformations (Congenital), etc.	2	Palate abnormally shaped	1	2·78
		Hare Lip	1	2·78
Carried forward	183			

Affection or System.	No. of Cases.	Actual Disease.	No. of Infants	Per cent
Brought forward	183			
Mouth	32	Ulcers, Patches & Fissures	26	73·22
		Glossitis	3	8·33
		Generalised Inflammatory Congestion of Mucous Membrane*	2	5·55
		Stomatitis	1	2·78
Nervous	65	Convulsions	16	44·44
		Chronic Neurosis†	12	33·33
		Paralysis (Cranial Nerves)	11	30·55
		Meningitis (chronic)	9	25·00
		Meningitis (acute, influenzal)	1	2·78
		Laryngismus Stridulus	3	8·33
		Meningismus	3	8·33
		Mental Deficiency	2	5·55
		Paralysis (Limbs)	2	5·55
		Cerebral Hæmorrhage	2	5·55
		Mongolism	1	2·78
		Masturbation	1	2·78
		Hydrocephalus	1	2·78
		Tetany	1	2·78
Nose	22	Chronic Obstructive Catarrh	22	61·11
Respiratory	20	Bronchitis	7	19·45
		Laryngitis (Chronic)	4	11·11
		Laryngitis (Acute)	1	2·78
		Bronchial Catarrh	1	2·78
		Pulmonary Collapse	2	5.55
		Pneumonia (Influenzal)	1	2·78
		Pleurisy	1	2·78
		Cirrhosis of Lung	1	2·78
		Pyo-Thorax	1	2·78
		Empyema	1	2·78
Ruptures	1	Inguinal	1	2·78
Skin and Subcutaneous Tissues	40	Chronic Eruptions and Skin Lesions (various)	33	91·66
		Cellulitis	3	8·33
		Onychia	1	2·78
		Fissures and Patches	1	2·78
		Pyæmia	1	2·78
		Dactylitis	1	2·78
Syphilis (Congenital)	33	Syphilis (congenital)	33	91·66
Carried forward	396			

* Commonly seen in young infants suffering from congenital syphilis.

† Extreme continued degree of nervous tension, crying, restlessness and sleeplessness.

Affection or System.	No. of Cases.	Actual Disease.	No. of Infants	Per cent
Brought forward ..	396			
Teething	3	Delayed Teething	3	8·33
Throat..	6	Faucitis	3	8·33
		Tonsillar Ulcers & Patches	2	5·55
		Tonsillitis	1	2·78
Umbilicus	6	Catarrhal Omphalitis ..	3	8·33
		Septic Omphalitis	3	8·33
Total	411			

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